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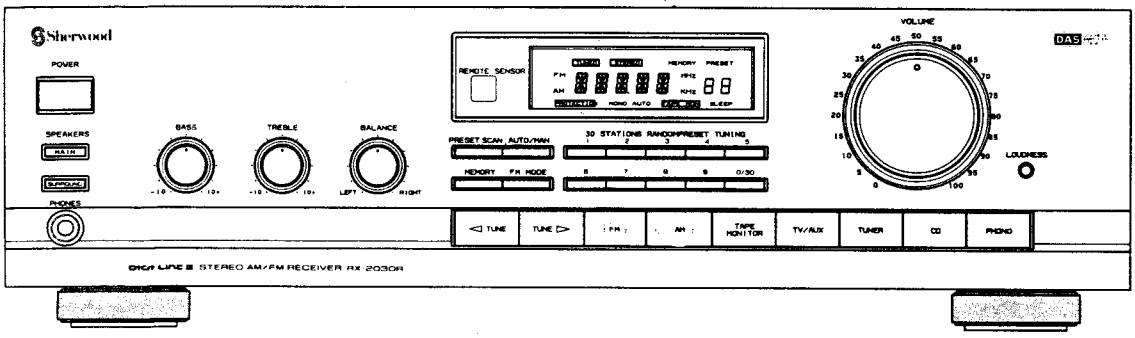
SERVICE MANUAL

RX-2030R

AM/FM
STEREO RECEIVER



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Sherwood

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SAFETY PRECAUTIONS

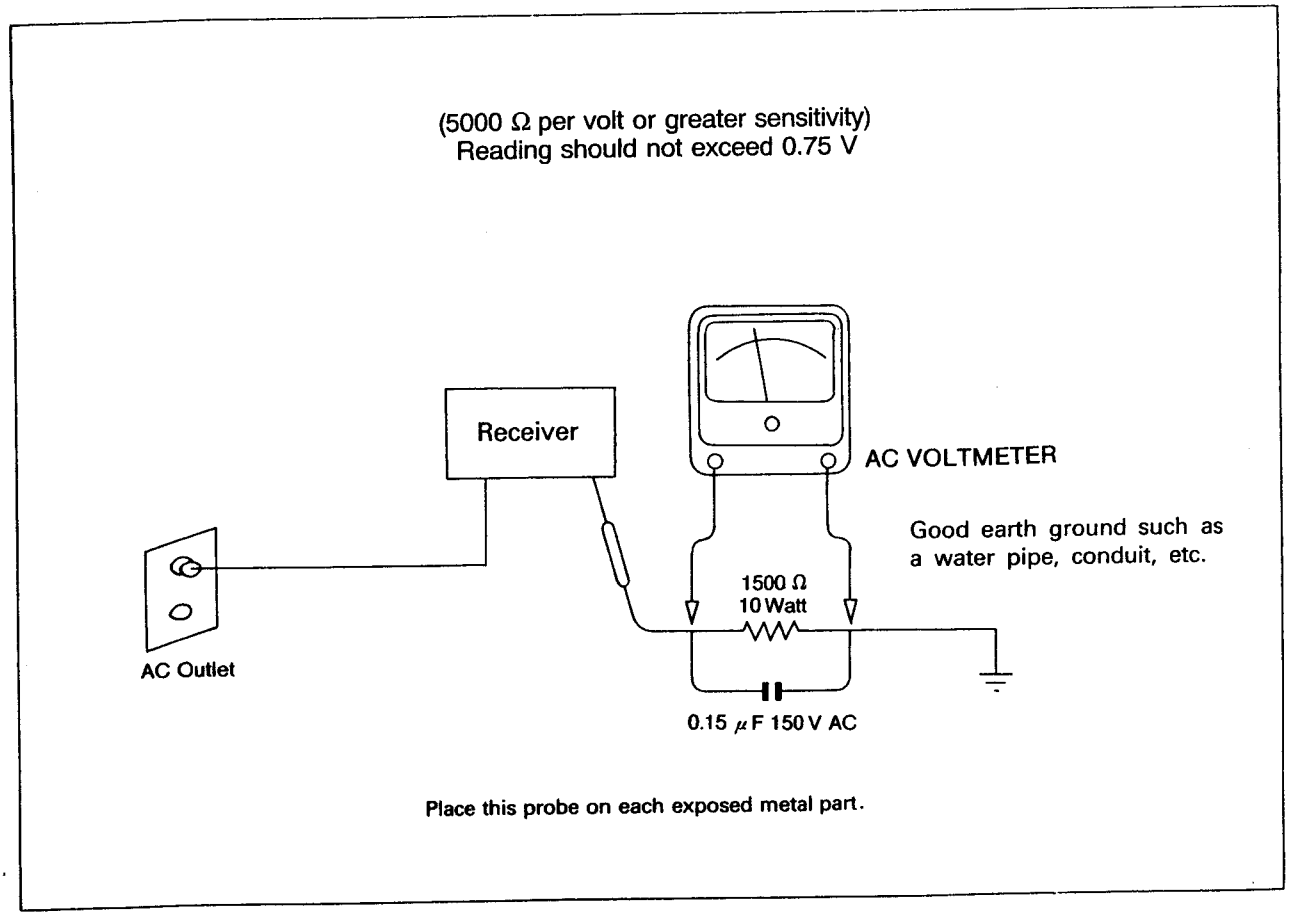
WARNING

Service Should not be attempted by anyone unfamiliar with the necessary precautions on this player. The following precautions are necessary during servicing.

1. Many electrical and mechanical parts in this player have special safety characteristics that often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements: electrical components having such features are identified by ⚠ in the schematic diagram and the parts list.

   Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characterstics as specified in the parts list may create shock, fire, or other hazards.

2. Before returning the set to the customer, always do an AC leakage current check on the exposed metal parts of the cabinet, such as terminals, screw heads, metal overlays, etc., to be sure the set is safe to operate without danger of electrical shock.
   Plug the AC line cord directly into a 120 V AC outlet**(120 V AC version only).** (Do not use a line isolation transformer during this check.)
   Use an AC voltmeter, having 5000 Ω per volt or greater sensitivity, in the following manner: Connect a 1500 Ω 10 watt resistor paralleled by a 0.15 µF 150 V AC capacitor, between a known good earth ground (water pipe, conduit, etc.) and the exposed metal parts, one at a time. Measure the AC voltage across the combination of a 1500 Ω resistor and a 0.15 µF capacitor. Reverse the AC plug at the AC outlet and repeat AC voltage measurements for each exposed metal part. Voltage measured must not exceed 0.75 V RMS. This corresponds to 0.2 mA AC.
   Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.


(5000 Ω per volt or greater sensitivity)
Reading should not exceed 0.75 V
Receiver
AC VOLTMETER
Good earth ground such as a water pipe, conduit, etc.
1500 Ω
10 Watt
AC Outlet
0.15 µF 150 V AC
Place this probe on each exposed metal part.

SPECIFICATIONS

Amplifier Section

Power Output, Continuous RMS with no more than THD
- at 8 ohms, 20 Hz-20 kHz: 35 W+35 W
- at 8 ohms, 1 kHz: 41 W+41 W

Intermodulation Distortion, 60 Hz : 7 kHz=4:1 sample 35 W output into 8 ohms: 0.1%
Damping Factor at 1 kHz, 8 ohms: 40
Input Sensitivity for 35 W output 8 ohms at 1 kHz
- PHONO: 2.5 mV
- AUX: 150 mV

Phono Input Overload at 1 kHz, 0.1% THD: 140 mV
Signal to Noise Ratio, IHF "A" wtd./unwtd;
- PHONO: 62/67 dB
- AUX: 85/90 dB

Frequency Response
- PHONO, RIAA 30-20,000 Hz: ±0.5 dB
- AUX at 1 W, -3 dB: 20~45 kHz

Tone Control, BASS at 100 Hz, TREBLE at 10 kHz: ± 10 dB
Loudness Control
- at 100 Hz: +6 dB
- at 10 kHz: +4 dB

Channel Separation at AUX shorted
- at 100 Hz: 50 dB
- at 1 kHz: 50 dB
- at 10 kHz: 45 dB

FM Section

	USA/ Canada	Australia/ Europe
Tuning Range	87.50-107.90 MHz	87.50-108.00 MHz
Scanning Frequency Interval (Auto/Manual)	200 kHz	50 kHz
Usable Sensitivity IHF at S+N+D/N+D=30 dB		2 uV
THD at 1 kHz, 100% Mod. Mono		0.2%
Stereo		0.4%
Stereo Separation at 1 kHz		43 dB
Signal to Noise Ratio IHF, Mono		70 dB
Stereo		65 dB
Frequency Response 20 Hz-15 kHz		±3 dB
Audio Output Voltage, 1 kHz, 100% Mod.		500 mV

AM Section

	USA/ Canada	Australia/ Europe
Tuning Range	520-1710 MHz	522-1611 kHz
Scanning Frequency Interval (Auto/Manual)	10 kHz	9 kHz
Usable Sensitivity IHF at S+N/N=20 dB, Loop antenna		500 uV/m
Signal to Noise Ratio, 30% Mod. ref		40 dB
Audio Output Voltage, 400 Hz, 80% Mod.		200 mV

General

Power Requirements:

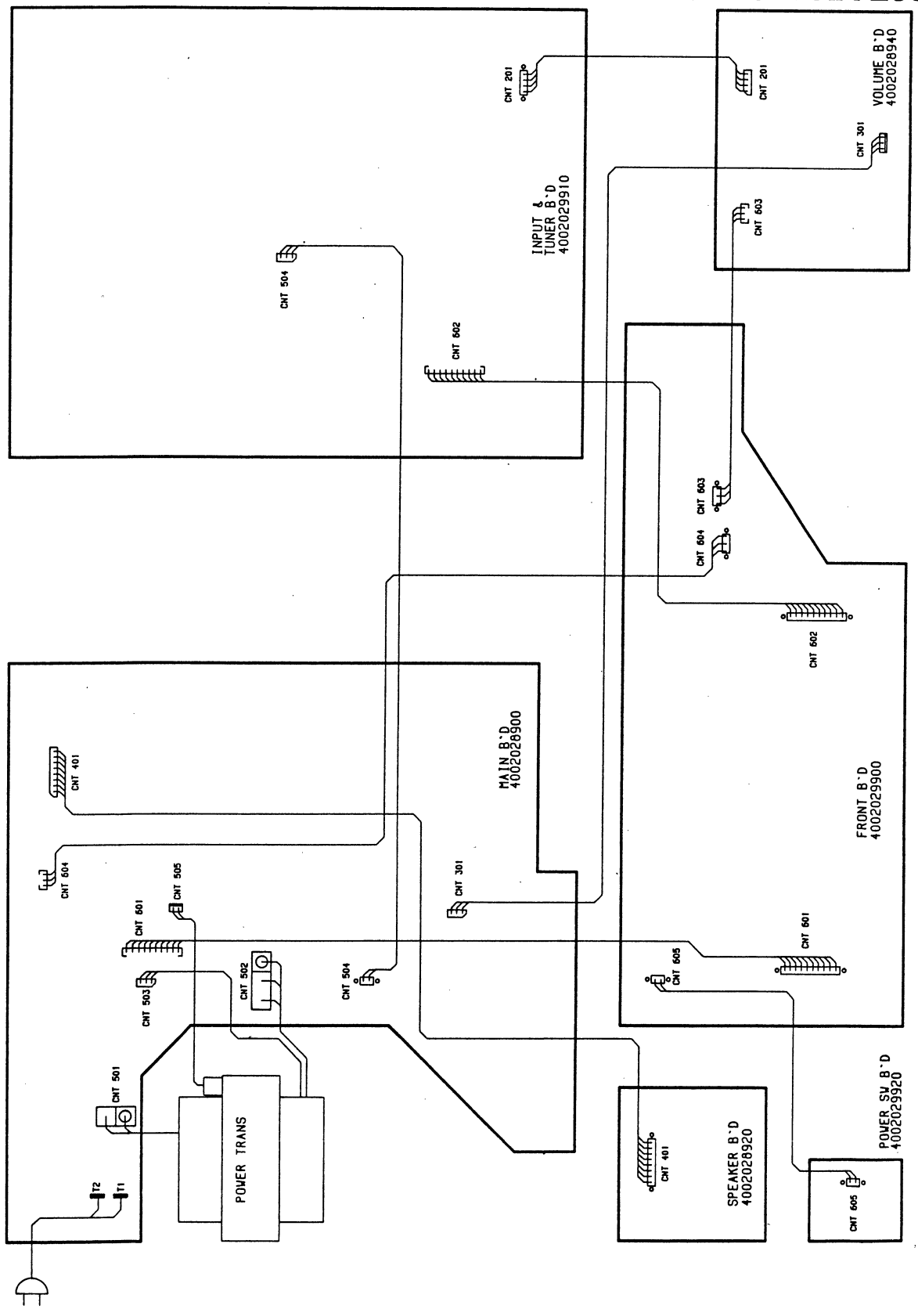
A : 120 V 60 Hz for American/Canadian version
B : 120/220 V, 60/50 Hz for multi-voltage version(switchable)
C : 230 V 50 Hz for general European version
D : 230 V 50 Hz for German/Italian version
E : 240 V 50 Hz for U.K/Austalian version
F : 230 V 50 Hz for Swiss/Scandinabian version

Dimensions.....440 (W) × 110 (H) × 245 (D) mm
Weightl(Net).....6 kg

Note : Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on the American(A) standard, and provides information on regional cir-cuit modification through use of alternate schematic diagrams or wiring diagram, and information on regional component variations through use of parts list. Design and specifictions subject to change without notice for improvement.

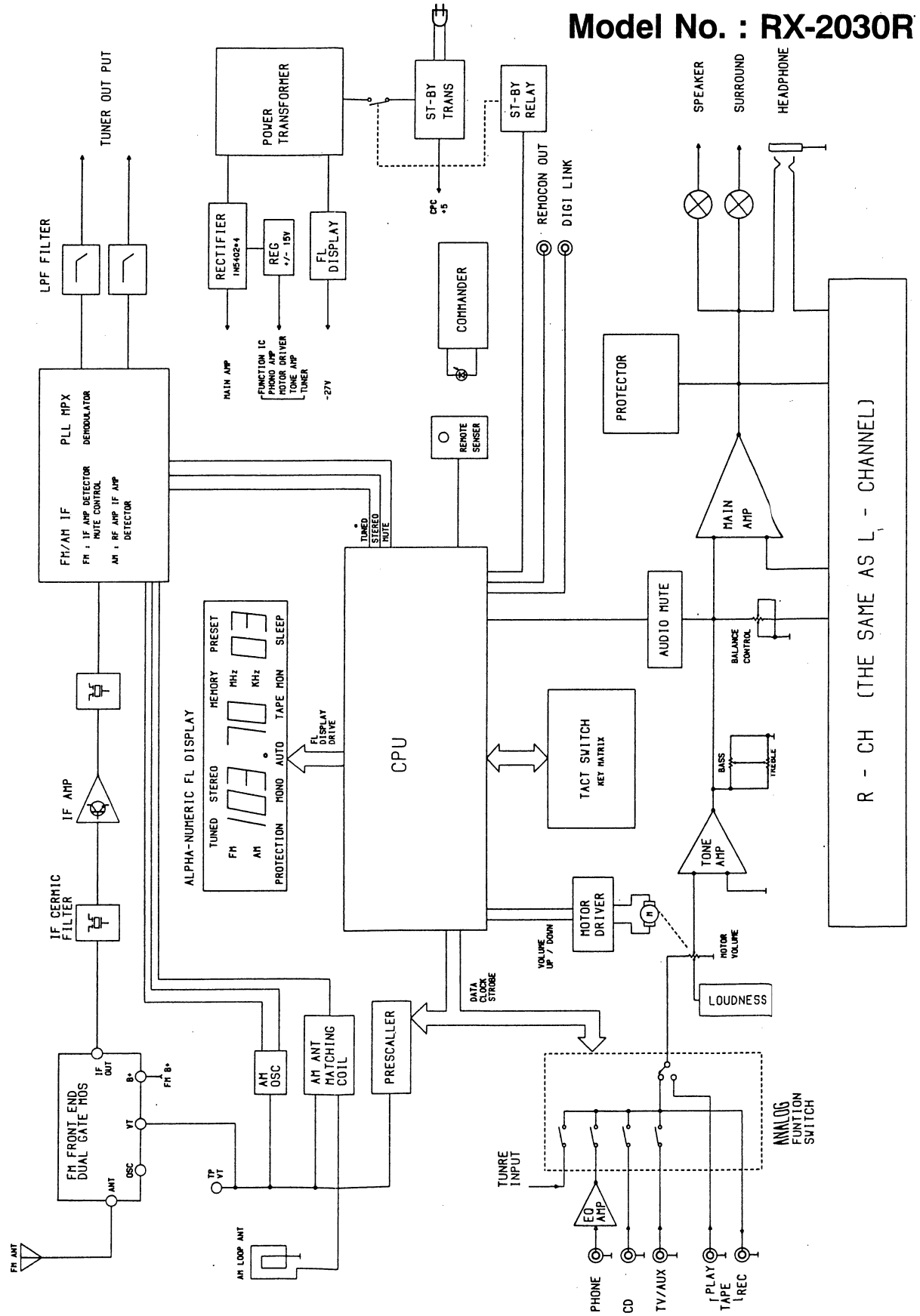
WIRING DIAGAM

Model No. : RX-2030R



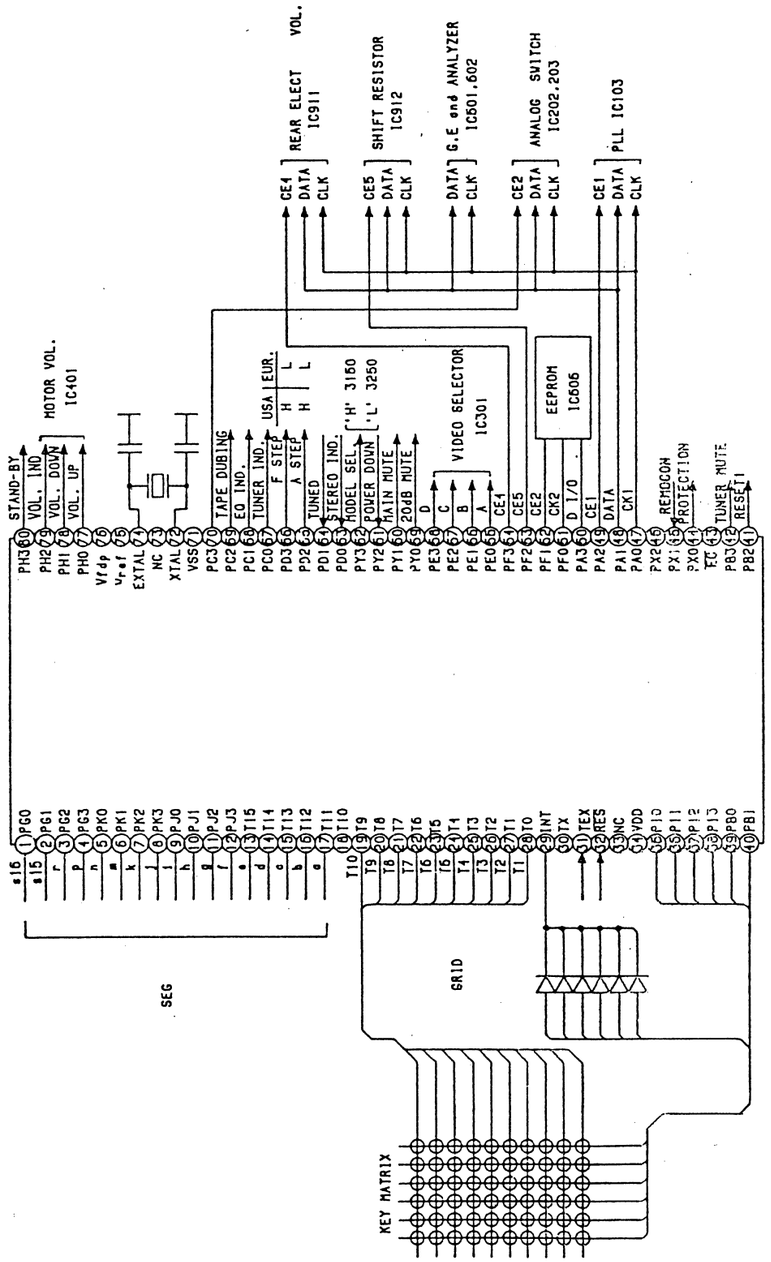
BLOCK DIAGRAM

Model No. : RX-2030R



CIRCUIT DESCRIPTION

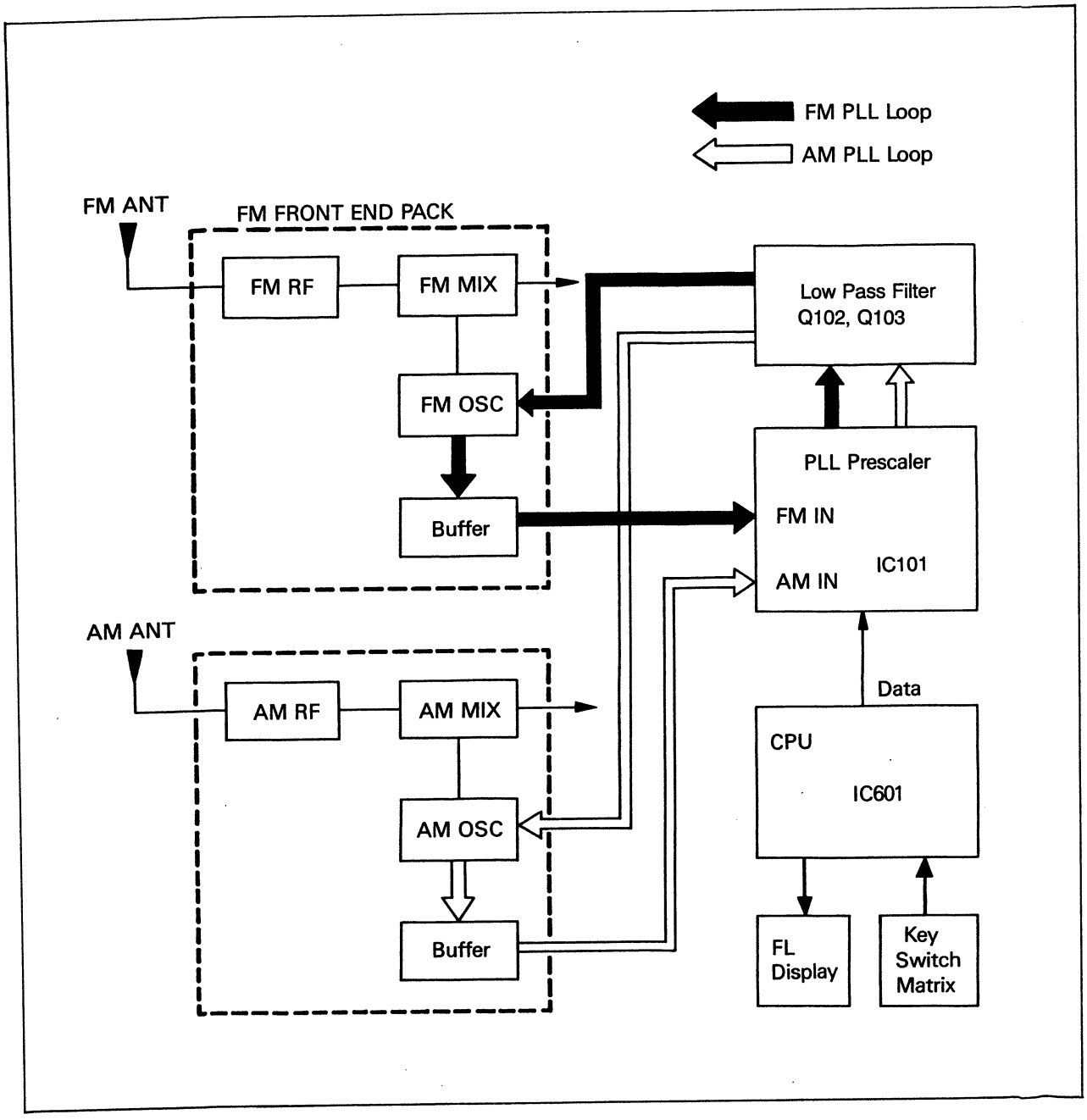
4 bit CMOS Microprocessor, MB 88514BP



Input and Output Terminal Functions

Code	Function
PA0 TO PA3 (PORT A)	Port A is a 4-bit input and output port, and each bit unit may be specified for input or output.
PB0 TO PB3 (PORT B)	Port B has the same functions as port A.
PC0 TO PC3 (PORT C)	Port C is a 4-bit input/output port, and may be specified for input or output by port units.
PD0 TO PD3 (PORT D)	Port D has the same functions as port C.
PE0/SEG20 TO PE3/SEG23 (PORT E/SEGMENT)	These 4-bit pins double as a 4-bit output dedicated port (port F) and segment outputs of the LCD driver (SEG20 to SEG23), either of which may be selected by exercising a mask option.
PF0/SEG16 TO PF3/SEG19 (PORT E/SEGMENT)	These 4-bit pins double as a 4-bit output dedicated port (port F) and segment outputs of the LCD driver (SEG16 to SEG19), either of which may be selected by exercising a mask option. Port F has equivalent functions to those of port E.
PX0 TO PX3 (PORT X)	Port Y is a 4-bit input/output port, where its two upper order bits (PY3 and PY2) serve for input and its two lower order bits (PY1 and PY0) for output. In addition to port functions, the two upper order bits also have the functions of an event counter input (EC/PY3)and an external interrupt input (INT2/PY2).
PY0 TO PY3	Port Y is a 4-bit input/output port, where its two upper order bits(PY3 and PY2) serve for input and its two lower order bits(PY1 and PY0) for output. In addition to port functions, the two upper order bits also have the functions of an evnet counter input (EC/PY3) and an external interrupt input(INT2 / PY2).
INT1	This is an external interrupt dedicated in.
SEG0 TO SEG15 (SEGMENTS)	These are segment signal output pins of the LCD controller/drvier
COM0 TO COM3 (COMMON)	These are common signal output pins of the LCD controller/driver.
V_{LC1} TO V_{LC3}	These are bias voltage power supply pins of the LCD controller/driver.
V_L	This pin exercises the control to cut the current off that flows in a standby mode through dividing resistors externally connected on at pins VLC1 TO VLC3 for the supply of bias power supply to the LCD controller/driver.
WP(WAKE-UP)	WP is an input serves for disengaging a standby mode by SLEEP or STOP at the rising of the inputs.
EXTAL AND XTAL	These pins serve for connecting a clock oscillator crystal on. For the oscillator format, either a crystal / ceramic oscillator or a CR oscillator may be specified by exercising a mask option.
RST	RST is an input/output pin, and at the rise of a power supply voltage, will output an "L" level generated then activated power-on resetting circuit being incorporated.
V_{DD}	This is the power supply pin.
V_{SS}	This pin provides the GND(ground)potential.

Digital Tuning System Description



Control Key and Mode Switch Matrix

Searching for Station

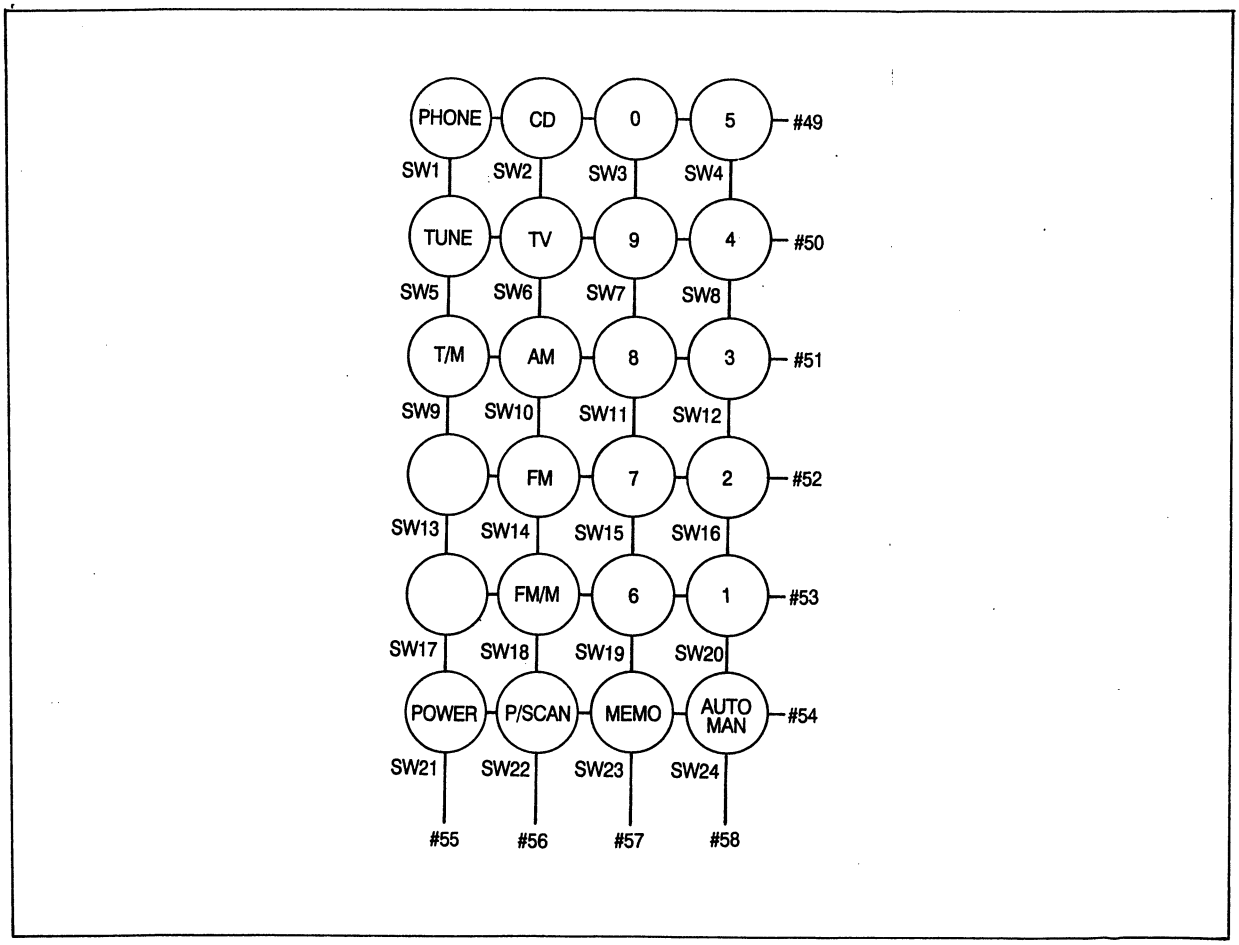
Automatic Tuning
Pressing the Up or Down key for a moment causes automatic up or down searching for a station at the speed of 180ms/ch until the terminal activates(active high) or any key is pressed.

Manual Tuning
Momentarily pressing the Up or Down key tunes to the next channel and holding down the key for more than 0.5 seconds allows the Tuner to move up or down the entire band at the speed of 180ms/ch until the key is released.

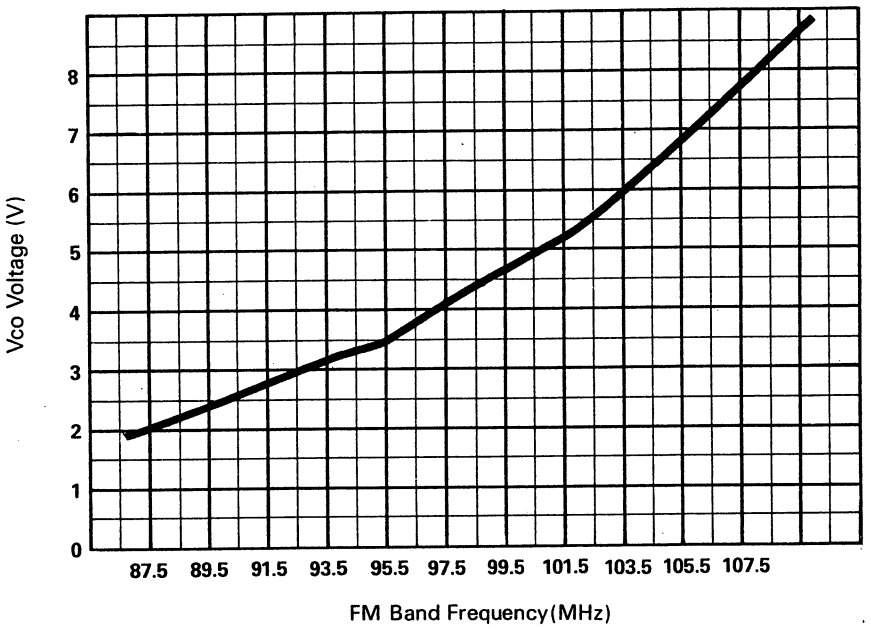
Memory Tuning

Memory
The tuning information is stored into an internal RAM by pressing the MEMORY key and then pressing the desired memory tuning key within 5 seconds from the time the MEMORY key is initially pressed. If no key is pressed during this 5 sec. period, the MEMORY function is cancelled.

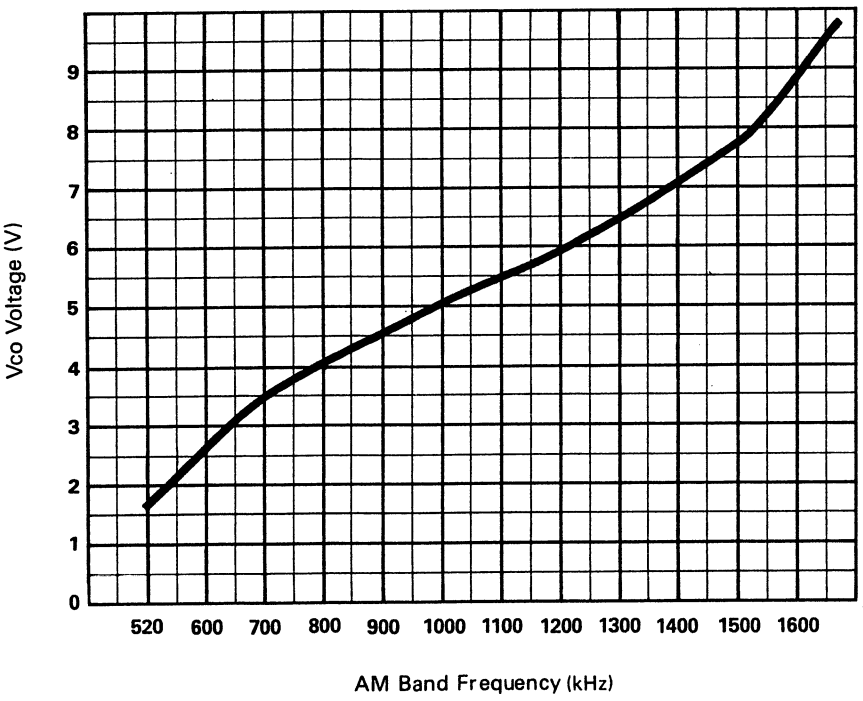
M1 to M10
Thirty AM and FM stations can be recalled from internal RAM. When it is switched from one band to the other band, the tuner tunes to the station last tuned on that band. Each time a station is changed, the controller provides a signal to mute the tuner.



Vco vs. FM Band Frequency Curve



Vco vs. AM Band Frequency Curve



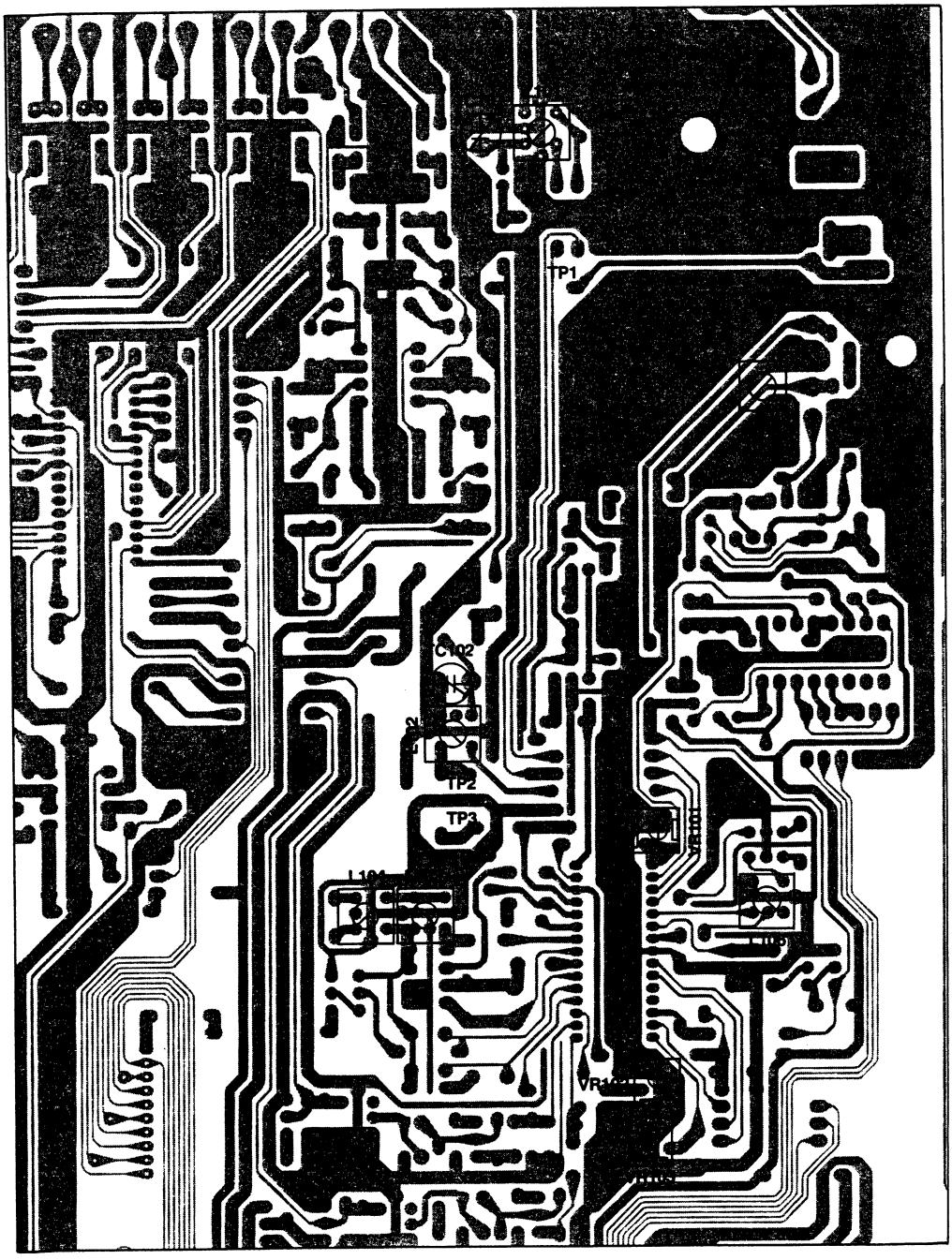
ALIGNMENT PROCEDURE

Equipment Required

- AM signal generator
- Oscilloscope
- AC voltmeter
- FM signal generator
- Stereo modulator
- Audio generator
- Distortion meter
- DC voltmeter
- Frequency counter

Note: Remove line cord antenna from FM external antenna terminal when aligning.

Alignment and Test Points (Tuner P.C.Board)



1. AM Adjustment

● Selector SW.....Tuner, AM

No	Subject	Feed Signal		Setting	Meausre	Adjust	Adjust	Remark
		From	To					
1.	Tuning Voltage	520 kHz	1710 kHz	*1) 520 kHz	Connect DVM TP1	L102	DC 1±0.2 V	
		1619 kHz		*2) 1710 kHz		TC102	DC 8.5±0.3 V	
		● Repeat the step *1) and *2) until DVM reads the tuning voltage mentioned above. ● In case the freq. is 9 kHz, the freq. of AM SG and appliance should be changed to *1) 522 kHz *2) 1611 kHz						
2.	IF	AM IF Genescope	ANT.	1000 kHz	Connect IF Genescope	L106	Symmetrical curve on AM IF Genescope	
3.	RF Runing	*1) AM SG 600 kHz, 74 dB 400 Hz(30% Mod.)	ANT.	600 kHz	Output Connect AC Voltmeter & Oscilloscope	L101	Maximize audio output	AM SG. Test Loop Ant. 60cm Appliance
		*2) AM SG 1400 kHz, 74 dB 400 Hz(30% Mod.)	ANT.	1400 kHz		TC101		
		● Feed Signal should be fed to Loop ant. through the TEST Loop ant, 60cm distant from the appliance ● Repeat the step *1) & *2) until no further improvement occurs. ● In case the freq. is 9 kHz, the freq. of AM SG and appliance should be changed to *1) 603 kHz *2) 1404 kHz						
4.	Signal Meter	AM SG 1000 kHz, 80 dB 400 Hz(30% Mod.)	ANT.	1000 kHz		VR103	Tuned light on	
		● In case the frequency. step is 9 kHz, the frequency of AM SG and appliance should be changed to 999 kHz.						

2. FM Adjustment

- Selector SW.....Tuner, FM(Mono/Stereo)
- Deviation.....USA/Canada(75kHz Dev.)
  Europe(40kHz Dev.)

No	Subject	Feed Signal		Setting Appliance	Measure Output	Adjust Point	Adjust For	Remark
		From	To					
1.	Tuning Voltage	87.5 MHz	107.9 MHz	87.5 MHz	Connect DVM TP1		DC 2.0±0.2 V	
				107.9 MHz			DC8.0±0.2 V	
2.	IF	FM IF Genescope	ANT.	98 MHz 60 dB	Connect IF Genescope C130⊕		Symmetrical S curve on FM IF Genescope	
3.	THD (Mono)	FM SG 98.1 MHz, 60 dB 1 kHz (75 kHz Dev.)	ANT.	98.1 MHz Mono	*1)Output Connect DVM	L103	DC 0±0.05 V	
					*2)Output Connect AC Voltmeter & Distortion Analyzer	L104	Minimize distortion	
		● Adjust the step *1) 1st and the step *2) next and repeat until to further improvement occurs.						
4.	THD (Stereo)	FM SSG 98.1 MHz,60 dB 1 kHz (75 kHz Dev.) Pilot 19 kHz (9% Mod.)	ANT.	98.1 MHz Stereo	Output connect AC voltmetr & distortion	Front-End	Minimize distortion	
5.	Mute level	FM SG 98.1 MHz, 15 μV 1 kHz (75 kHz Dev.)	ANT.	98.1 MHz Mono	Output connect oscilloscope	VR101	Tuned on	
6.	Separation	*1) FM SSG 98.1 MHz, 0 dB 1 kHz(75 kHz, Dev.) Pilot 19 kHz (10% Mod.) (L ch.Mode)	ANT.	98.1 MHz Stereo	R ch. Mode connect AC voltmeter & distortion analyzer and oscilloscope	VR102	Minimize output	L ch. Mode
		*2) Same as above (R ch.Mode)			L ch. Mode connect same as above			R ch. Mode
		● Repeat the ste-p *1) until no further improvement occurs.						

TROUBLESHOOTING

Symptom	Cause and Remedy
Receiver inoperative (FL indicator does not light)	A) Faulty AC power cord. Replace. B) Defect in the power switch. Replace the power transformer. D) Blown fuse. Replace the fuse.
Fuse blows when power is turned on.	A) Defective power transformer. Replace. B) Short in the primary or secondary of the transformer circuitry. C) Damaged rectifier D501 to D504. Replace the defective component(s). D) Short circuit in the rectifier circuit. Repair the short.
FL indicator lights but no sound from both channels	A) Speaker switch A or B defective. Replace the defective switch(es). B) Defect in transistor Q411 L/R, Q412 L/R on the Main Amp Board. Replace the defective component(s).
Speaker inoperative	A) Speaker switch A defective. Replace.
Speaker SURROUND inoperative	A) Speaker switch for surround defective. Replace.
Speaker works normally but headphones Inoperative	A) Headphone plug does not mate with jack. Replace the plug. B) Defective resistor R701L/R. Replace.
All the inputs work normally except CD/AUX(TV/VCR)input	A) Poor contact in CD/AUX(TAPE 1) input jack. Repair or replace the jack. B) Defective CD/AUX switch(es), TAPE 1 switch(es), or IC104, IC105. Replace.
PHONO input inoperative	A) Poor contact in phono input jack. Repair or replace the jack. B) Defective phono switch or IC103. Replace.
TAPE OUT has no effect	A) Defective contact in tape out jack. Repair or replace the jack. B) Defective contact in tape monitor switch. Repair or replace.
FM inoperative	A) Defective front-end.(FE407-A15) Replace the switch. B) Defective FM switch. Replace the switch. C) Defective transistor Q101, Q104, IC102 Replace the defective transistor(s) or IC(s). D) Defective coil L103, L104 Replace the coil(s). E) Defective lead-in. Repair or replace the lead-in. F) Ceramic filter CF101, CF102 defective. Replace the defective ceramic filter(s). G) Defective controller circuit component. Replace.

Symptom	Cause and Remedy
Poor multiplex separation	A) Improper adjustment. Readjust VR102. (Refer to MPX Alignment.) B) IC defective. Replace. C) Variable resistor VR102 defective. Replace the variable resistor(s).
STEREO indicator does not light	A) Defective indicator in FL. Replace. B) Defective IC102. Replace the defective component.
FM volume not sufficient	A) If volume from both L and R channels is not loud enough: Front-end section defective, or faulty IC102, coil L103, L104 or defective capacitor C139 of tuner board. Locate and replace the defective component(s). B) If sound of one channel is not enough: Replace L107,L108.
FM MONO has no effect	A) Defective FM MONO Replace th switch.
AM inoperative	A) Damaged IC102 of tuner board. Replace. B) Defective L101, L102, L106 or CF104 of tuner board. Replace the defective component(s). C) Resistor R111 defective. Replace the defective component(s). D) Capacitor C107, C130 defective. Replace the defective capacitor(s). E) Defective AM switch. Replace. F) Defective varicap diode VD101, VD102 Replace varicap diods(s). G) Damaged AM loop antenna. Repair or replace. H) Defective controller circuit component. Replace.
Bass control has no effect	A) Variable resistor Bass defective. Replace. B) Defective R305 L/R, R306 L/R, C304 L/R, C305 L/R, Replace the defective component(s).
Treble control has no effect	A) Variable resistor Treble defective. B) Defective R307 L/R, R308 L/R, C306 L/R, C307 L/R. Replace the defective component(s).
Excessive noise using PHONO input	A) Defective IC103. Replace. B) Defective R147 L/R, R153 L/R, C156 L/R, C162 L/R. Replace the defective component(s).
Auto tune inoperative (UP/DOWN) (AM or FM)	A) Poor contact in UP/Down key. Replace. B) Defective IC601. Replace.
Memory setting(keys 1-10) inoperative	A) Poor contact in memory keys 1-10. Replace. B) Poor contact in memory set key. Replace. C) Defective IC601 Replace the defective component.

Symptom	Cause and Remedy
FL inoperative	A) FL defective. Replace. B) Defective IC601 Replace. C) Defective FL601 Replace.
Noise Volume control	A) Defective IC201 Replace. B) Defective capacitor C203 or C204. Replace the defective capacitor(s).
Remote Control Unit inoperative	A) Weak Battery. Replace. B) Defective unit. Replace. C) Defective IC701 (CPU board) or IC001. Replace.

CABINET & CHASSIS PARTS LIST

Ref. No.	Parts No.	Description	Q'ty	Version
PACKGE				
	9722036710	Cushion Poly		
	9715000120	Film Soft PE		
	049605172131	Box Carton		
	9705001520	Poly BAG		
ACCESSORIES				
	4348000810	ANT Wire(FM)		
	2608207361	ANT AM Loop Stand Strip Wire		
	058581000144	Commader		
CABINET				
1	048543053411	Botton Function, ABS Black	1	
2	048545082911	Knob Tone, ABS, Black	3	
3	048555046011	Display Window, PVC	1	D
	048555046012	Display Window, PVC	1	A,B,C,E,F,G
4	8543033210	Knob Volume, ABS, Black	1	
5	048535039811	Badge, Sherood	1	
6	048501030212	Panel Front, ABS, Black	1	
7	8545088310	Button Power, ABS, Black	1	
8	048545082211	Button Speaker(Main), ABS Black	1	
8-1	048545082212	Button Speaker(Surrond), ABS Black	1	
9	4438004410	Jack Phone	1	
10	6045010020	Holder Sensor, ABS, Black	1	
11	4658003710	Switch Tact	24	
12	8543033010	Button Pre-Set, ABS, Black	1	
13	6555002510	Spring	1	
14	8545082610	Button Mute, ABS, Black	1	
18	6165146310	Shield Fence	1	
19	046122021331	Cover Top	1	
20	046033101611	Foot (Hot Stamp)	2	
21	3208060410	VR Bass/Tre	2	
22	3208060410	VR Balance	1	
23	6122631110	Frame Left, SECC, 1t	1	
24	6033101610	Foot, ABS, Black	2	
25	7505206130	Regulator TR Heatsink, AL	1	
26	7503015710	Heatsink Power, AL	1	
27	6503029510	Bracket Heatsink, AL	1	
28	6122416210	Cover Botton	1	
29	6122631010	Frame Light, SECC, 1t	1	
30	4438108110	Jack RCA(4P), ABS	1	
31	4438103210	Jack RCA(6P)	1	
32	4408101610	Antena Terminal, ABS UL94MB	1	A,B
	44081016510	Antenna Terminal, ABS UL94MB	1	C,D,E,G
33	4408105510	Antenna Terminal, ABS UL94MB	1	A,B
34	4448103010 ⚠	Outlet AC, 94V-1	1	A,B
	4448103610 ⚠	Outlet AC, 94V-1	1	C,D,E,G
35	4438105010	Digilink Jack	1	
36	046102036921	Chassis Back, SECC, 1t	1	A
	046102036931	Chassis Back, SECC, 1t	1	B
	046102036941	Chassis Back, SECC, 1t	1	C,G
	046102036951	Chassis Back, SECC, 1t	1	D
	046102036961	Chassis Back, SECC, 1t	1	E
	046102036971	Chassis Back, SECC, 1t	1	F
37	4038001410 ⚠	AC cord	1	A
	4308000430 ⚠	AC cord	1	B,C,D,E,F,G
38	6518000710	Cord Stopper	1	A
	6518000111	Cord Stopper	1	B,C,D,F,G
39	4408104910	System Ground	1	
40	8545082020	Indicater	1	
S1	8109230083	Screw #2BTC 3x8B	55	
S2	8159230081	Screw #2WPTC 3x8	5	
S3	8159440083	Screw WSAM 4x8 B	8	
S4	8119240061	Screw #2PTC 4x6	1	
41	2828000671 ⚠	Power Trans Former, 240V 50Hz	1	E
	2828000681 ⚠	Power Trans Former, 220V 60Hz	1	G
	2828000451 ⚠	Power Trans Former, 230V 50Hz	1	D
	2828000471 ⚠	Power Trans Former, 120V 60Hz	1	A
42	052438012201	Posistor, PTH9M04BE222TS2F333		
P1	4002028900	PCB Main	1	
P1-1	4002028910	PCB Volume	1	
P1-2	4002028930	PCB Speaker Selector	1	
P2	4002029900	PCB Front	1	
P2-1	4002029910	PCB Input & Tuner	1	
P2-2	4002029920	PCB Power	1	

Ref. No.	Parts No.	Description	Q'ty	Version

NOTES :

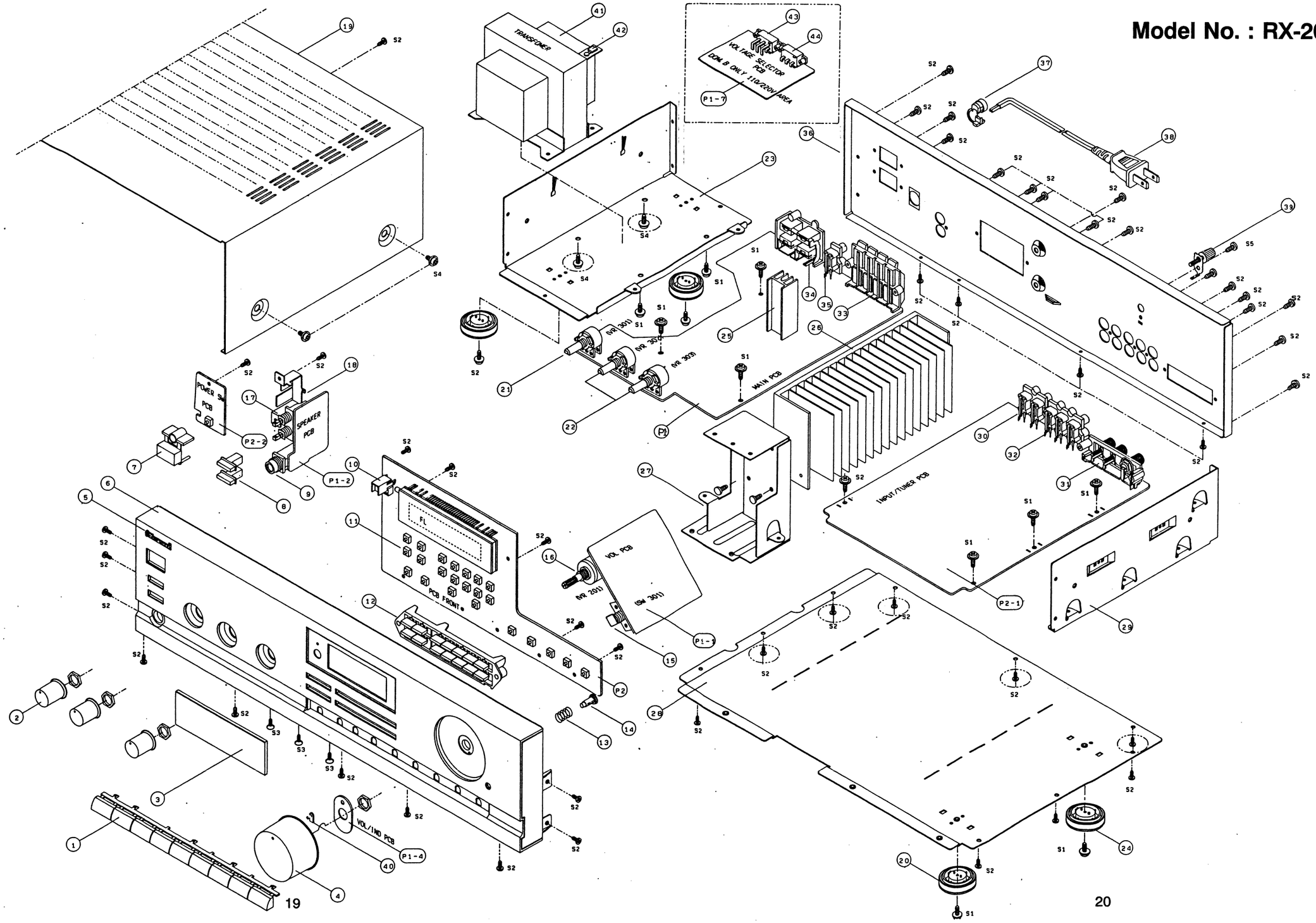
1. Parts order must contain Model Number, Part Number and Description.
2. Ordering quantity of screws and resistiors must be multiple of 10pcs.

PRODUCT SAFETY NOTICE

Each precaution in this manual should be follower during servicing. Components identified with the IEC symbol ⚠ in the parts list and the safety can be of special significance. When replacing a component identified with ⚠ , use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual. Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

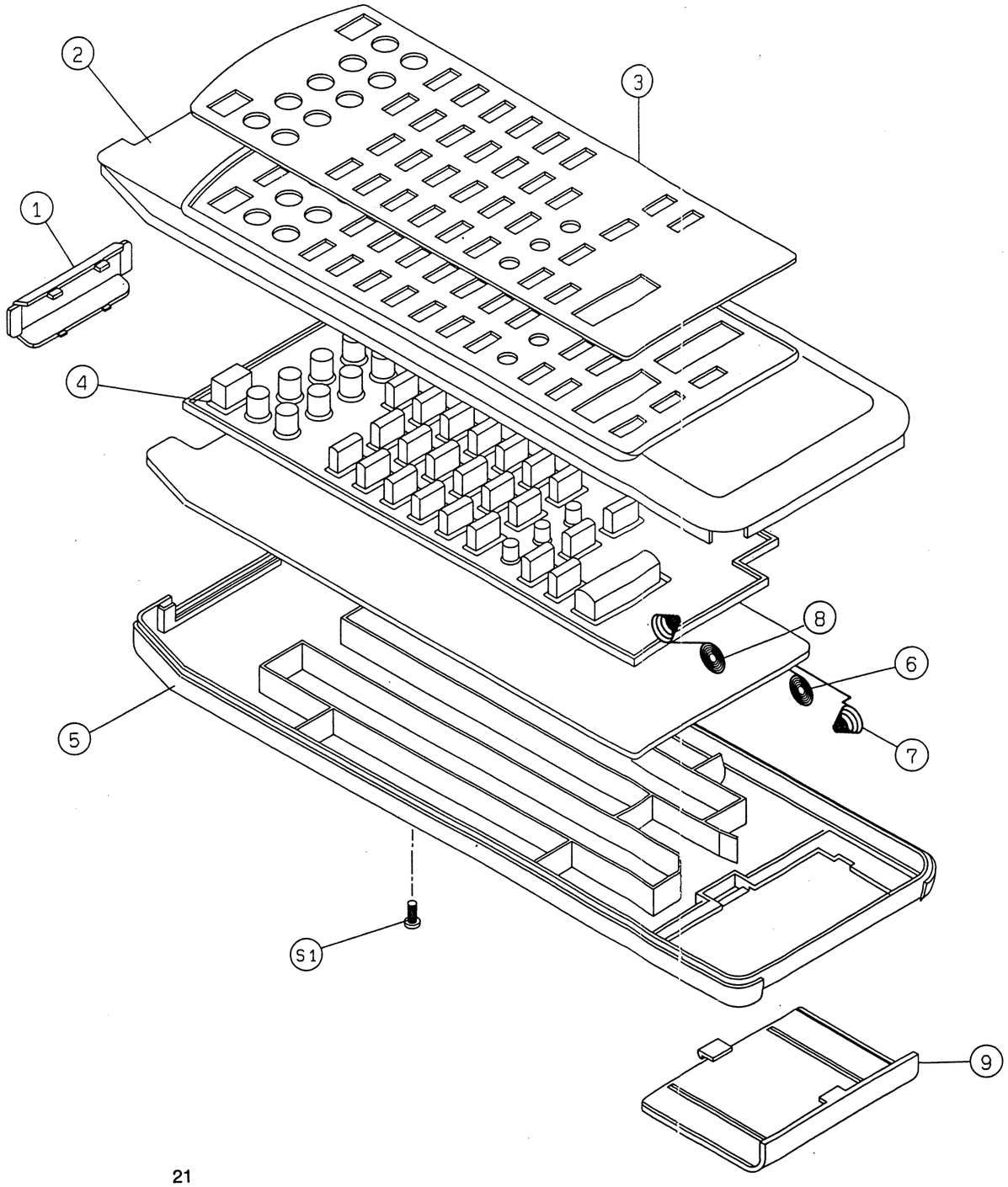
EXPLODED VIEW (CBINET & CHASSIS)

Model No. : RX-2030R



EXPLODED VIEW Ⅱ (COMMANDER)

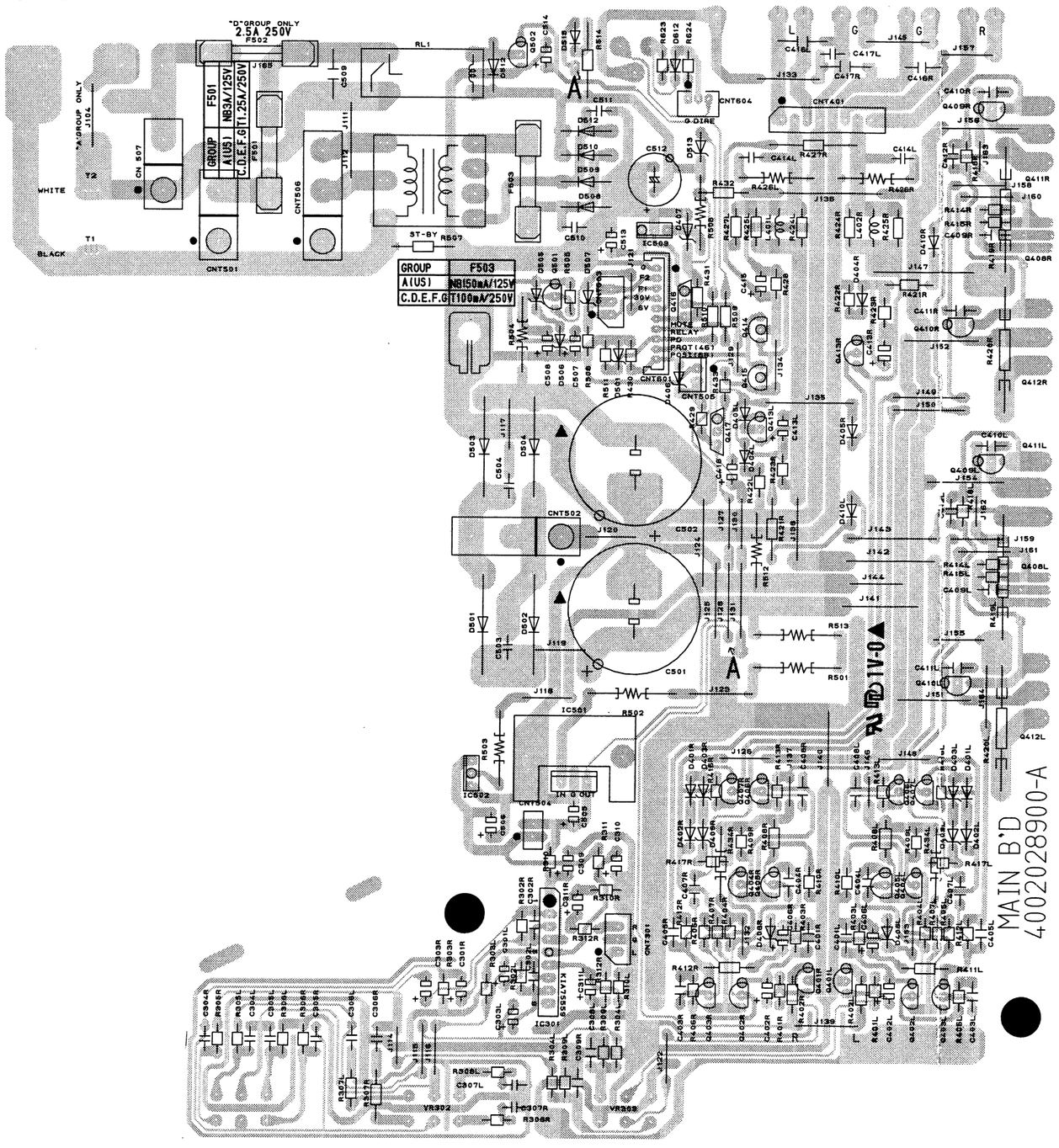
Model No.: RX2030R

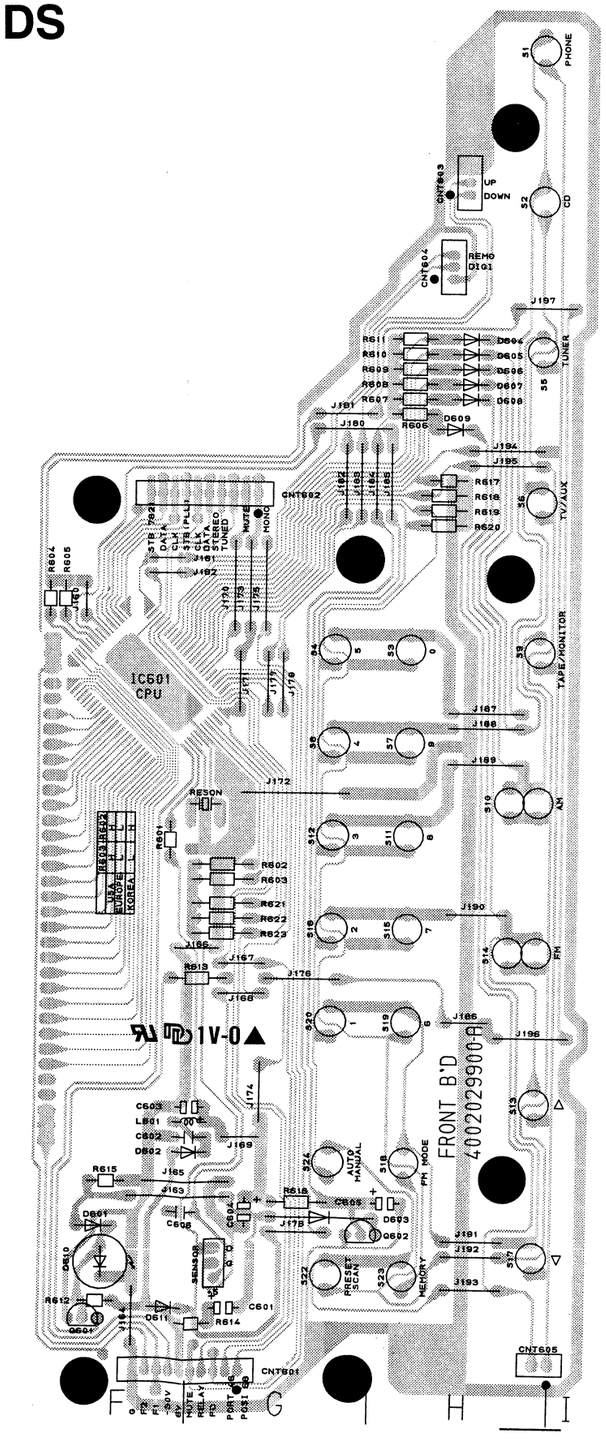


No	Parts No.	Description	Q'ty	Version
1	855040210	Upper Cover	1	
2	048582001112	Cover top	1	
3	048552003622	Plate Function	1	A,B,C,D,E,F
3	048552003623	Rubber Tact	1	DOM
4	048722000941	Rubber Tact	1	A,B,C,D,E,F
4	048722000942	Rubber Tact	1	DOM
5	8582001210	Cover Bottom	1	
6	6555009810	Spring Battery(-)	1	
7	6555009810	Spring Battery(+)	1	
8	6555605310	Spring Battery(B)	1	
9	8583004410	Cover Battery	1	
S1	8019120103	Screw PM2X10B	1	

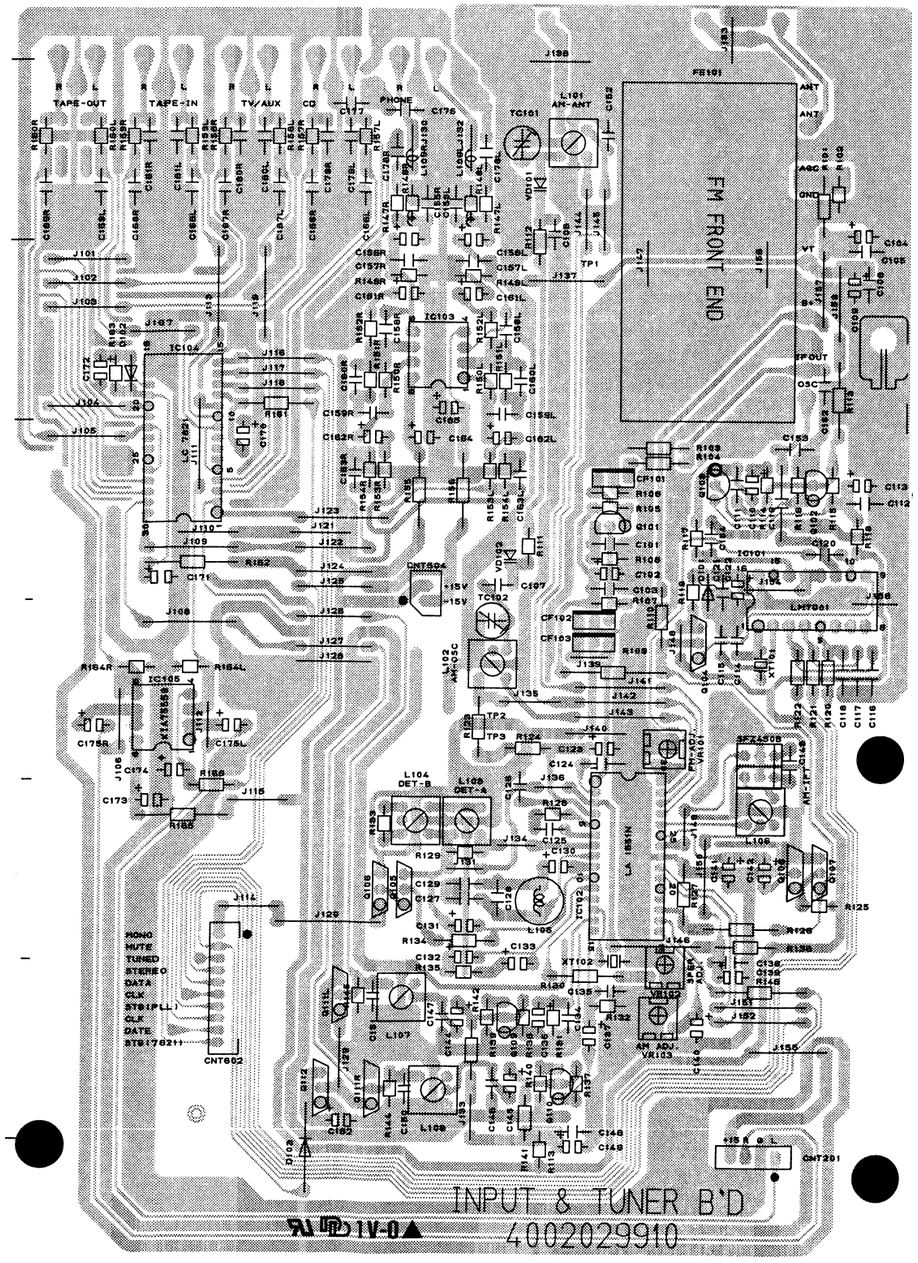
PRINTED CIRCUIT BOARDS

MAIN P.C.BOARD

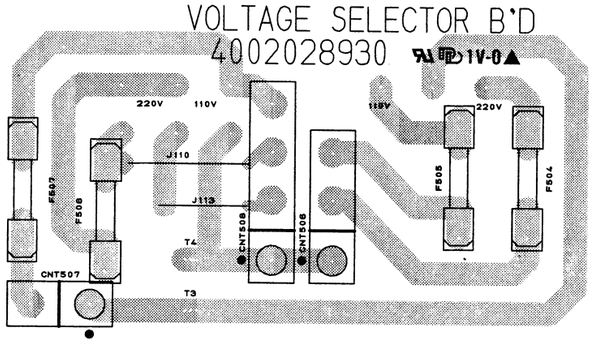




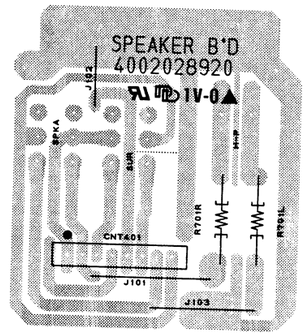
INPUT & TUNER P.C.BOARD



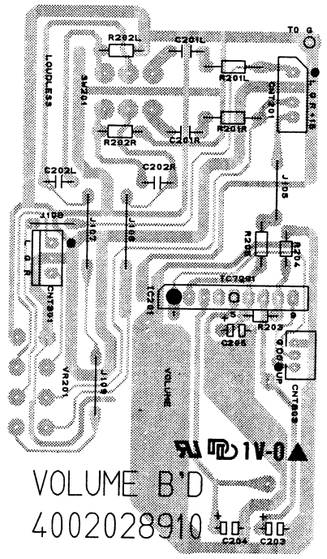
VOLTAGE SELECTOR P.C.BOARD



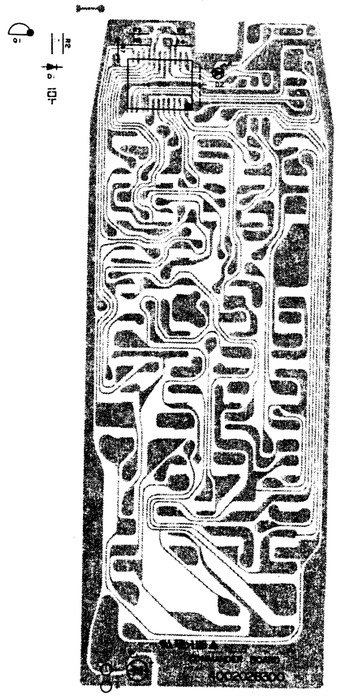
SPEAKER P.C.BOARD



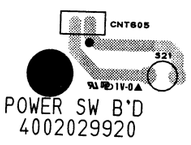
VOLUME P.C.BOARD



REMOCON P.C.BOARD



POWER P.C.BOARD



P.C.BOARD PARTS LIST

Ref. No.	Parts No.	Description	Q'ty	Version
P2-1	**054010110001**	**Ass'y P.C.B Input & Tuner**		**A**
	054010410002	**Ass'y P.C.B Input & Tuner**		**D**
	054010510003	**Ass'y P.C.B Input & Tuner**		**E,F,G**
30	4438108110	Jack RCA(4P), ABS	1	
31	4438103210	Jack RCA(6P)	1	
32	4408107110	Antena Terminal, ABS UL94MB	1	A,B
C101	3519223935	Ceramic Tubular 0.022 uF 50V J	1	
C102	3479347041	Electric SG 47 uF 25V M	1	
C103	3519223935	Ceramic Tubular 0.022 uF 50V J	1	
C104	3479310141	Electric SG 100 uF 25V M	1	
C105	3519223935	Ceramic Tubular 0.022 uF 50V J	1	
C106	3579473530	Ceramic Disc 0.047 uF 50V J	1	
C107	3619471110	Poly 470 pF 50V J	1	
C108	3519103935	Ceramic Tubular 0.01 uF 50V J	1	
C109	3479222871	Electric SA 0.22 uF 50V M	1	
C110	3479210971	Electric SA 1 uF 50V M	1	
C111	3519103935	Ceramic Tubular 0.01 uF 50V J	1	
C112	3519223935	Ceramic Tubular 0.022 uF 50V J	1	
C113	3479347041	Electric SG 47 uF 25V M	1	
C114/115	3529330210	Ceramic Disc CH 33 pF 50V J	2	
C116-119	3519101935	Ceramic Tubular 100 pF 50V J	4	
C120	3579103530	Ceramic Disc 0.01 uF 50V J	1	
C121	3579223530	Ceramic Disc 0.022 uF 50V J	1	
C122	3479347041	Electric SG 47 uF 25V M	1	
C123	3479233971	Electric SA 3.3 uF 50V M	1	
C124	3519473935	Ceramic Tubular 0.047 uF 50V J	1	
C125	3679223120	Mylar 0.022 uF 100V J	1	
C126	3679392120	Mylar 0.0039 uF 100V J	1	
C127-129	3519101935	Ceramic Tubular 100 pF 50V J	3	D,E,F,G,H
C130	3479210071	Electric SA 10 uF 50V M	1	
C131	3479210971	Electric SA 1 uF 50V M	1	
C132	3479233871	Electric SA 0.33 uF 50V M	1	
C133	3479210971	Electric SA 1 uF 50V M	1	
C134/135	3679822120	Mylar 0.0082 uF 100V J	2	
C136/137	3479233971	Electric SA 3.3 uF 50V M	2	
C138	3519223935	Ceramic Tubular 0.022 uF 50V J	1	
C139	3479310141	Electric SG 100 uF 25V M	1	
C140	3479210071	Electric SA 10 uF 50V M	1	
C141	3479222971	Electric SA 2.2 uF 50V M	1	
C142	3479210071	Electric SA 10 uF 50V M	1	
C143	3519470935	Ceramic Tubular 47 pF 50V J	1	
C144/145	3479233971	Electric SA 3.3 uF 50V M	2	
C146/147	3679222120	Mylar 0.0022 uF 100V J	2	
C148	3519223935	Ceramic Tubular 0.022 uF 50V J	1	
C149	3479347041	Electric SG 47 uF 25V M	1	
C150/151	3679682120	Mylar 0.0068 uF 100V J	2	
C152	3579473530	Ceramic Disc 0.047 uF 50V J	1	
C155L/R	3519101935	Ceramic Tubular 100 pF 50V J	2	
C156L/R	3479210971	Electric SA 1 uF 50V M	2	
C157L/R	3519100935	Ceramic Tubular 10 pF 50V J	2	
C158L/R	3579223530	Ceramic Disc 0.022 uF 50V J	2	
C159L/R	3679562120	Mylar 0.0056 uF 100V J	2	
C160L/R	3679182120	Mylar 0.0018 uF 100V J	2	
C161L/R	3479210071	Electric SA 10 uF 50V M	2	
C162L/R	3479168871	Electric SA 0.68 uF 50V M	2	
C163L/R	3679152120	Mylar 0.0015 uF 100V J	2	
C164/165	3479347041	Electric SG 47 uF 25V M	2	
C166L/R	3519101935	Ceramic Tubular 100 pF 50V J	2	
C167L/R	3519101935	Ceramic Tubular 100 pF 50V J	2	
C168L/R	3519101935	Ceramic Tubular 100 pF 50V J	2	
C169L/R	3519101935	Ceramic Tubular 100 pF 50V J	2	
C170/171	3479347041	Electric SG 47 uF 25V M	2	
C172	3479210971	Electric SA 1 uF 50V M	1	
C173/174	3479347041	Electric SG 47 uF 25V M	2	
C175L/R	3479247971	Electric SA 4.7 uF 50V M	2	
C176/177	2679224297	Mylar 0.22 uF 100V J	2	
C178L/R	3519101935	Ceramic Tubular 100 pF 50V J	2	D
C179L/R	3519101935	Ceramic Tubular 100 pF 50V J	2	D
C180L/R	3519101935	Ceramic Tubular 100 pF 50V J	2	D
C181L/R	3519101935	Ceramic Tubular 100 pF 50V J	2	D
C182	3479247971	Electric SA 4.7 uF 50V M	1	
TC101	3838001160	20P, TZ03R220F	1	
TC102	3838001150	10P, TZ03110F	1	
L101	2608207352	AM Matching, Adjust Coil	1	
L102	2638201150	AM OSC, Can Type	1	
L103	2838501210	DET(B) QUAD DET FM, Can Type	1	
L104	2838501110	DET(A) QUAD DET FM, Can Type	1	
L105	2648601430	Inductor 20.8mH	1	D
L106	2848001250	AM IFT, Can Type	1	
L107	2658301100	MPX Filter 19kHz	1	

Ref. No.	Parts No.	Description	Q'ty	Version
L108	2658301100	MPX Filter 19kHz	1	
L109L/R	2648601470	Inductor 50uH	2	D
D101	2258599103	Zener, UZ 5.1BSB	1	
D102	2058306101	1N4148, Switching	1	
D103	2058306101	1N4148, Switching	1	
VD101/102	2058819106	KV1236Z	2	
CF101-103	3908011001	CF 10.7MHz MA8-A	3	
CF104	3908001150	SFZ450B,AM IF Filter	1	
FE101	3928801930	FM Front-end, FE306-A15	1	A,C,E,F,G
	3928801890	FM Front-end, FE407-G60	1	D
IC101	2138017112	LM7001, Pre Scalar	1	
IC102	2168417114	LA1851N, AM,FM Amplifier	1	
IC103	2168206103	KIA75559S(KIA4559P), OP Amplifier	1	
IC104	2168017132	LC7821, Function Switching	1	
IC105	2168206103	KIA75559S(KIA4559P), OP Amplifier	1	
R101	3069104970	Carbon Film 100k ohm 1/5W J	1	
R102	3069823970	Carbon Film 82k ohm 1/5W J	1	
R103	3069561970	Carbon Film 560 ohm 1/5W J	1	
R104	3069181970	Carbon Film 180 ohm 1/5W J	1	
R105	3069332970	Carbon Film 3.3k ohm 1/5W J	1	
R106	3069561970	Carbon Film 560 ohm 1/5W J	1	
R107/108	3069331970	Carbon Film 330 ohm 1/5W J	2	
R109	3069101970	Carbon Film 100 ohm 1/5W J	1	
R110	3069820970	Carbon Film 82 ohm 1/5W J	1	
R111/112	3069104970	Carbon Film 100k ohm 1/5W J	2	
R113	3069102970	Carbon Film 1k ohm 1/5W J	1	
R114	3069152970	Carbon Film 1.5k ohm 1/5W J	1	
R115	3069103970	Carbon Film 10k ohm 1/5W J	1	
R116	3069101970	Carbon Film 100 ohm 1/5W J	1	
R117	3069821970	Carbon Film 820 ohm 1/5W J	1	
R118	3069221970	Carbon Film 220 ohm 1/5W J	1	
R119	3069271970	Carbon Film 270 ohm 1/5W J	1	
R120-122	3069102970	Carbon Film 1k ohm 1/5W J	3	
R123	3069393970	Carbon Film 39k ohm 1/5W J	1	
R124	3069102970	Carbon Film 1k ohm 1/5W J	1	
R125	3069103970	Carbon Film 10k ohm 1/5W J	1	
R126	3069473970	Carbon Film 47k ohm 1/5W J	1	
R127	3069333970	Carbon Film 33k ohm 1/5W J	1	
R128	3069103970	Carbon Film 10k ohm 1/5W J	1	
R129	3069822970	Carbon Film 8.2k ohm 1/5W J	1	
R130	3069221970	Carbon Film 220 ohm 1/5W J	1	
R131/132	3069103970	Carbon Film 10k ohm 1/5W J	2	
R133/134	3069332970	Carbon Film 3.3k ohm 1/5W J	2	
R135	3069512970	Carbon Film 5.1k ohm 1/5W J	1	
R136	3069181970	Carbon Film 180 ohm 1/5W J	1	
R137/138	3069824970	Carbon Film 820k ohm 1/5W J	2	
R139/140	3069242970	Carbon Film 2.4k ohm 1/5W J	2	
R141/142	3069332970	Carbon Film 3.3k ohm 1/5W J	2	
R143	3069221970	Carbon Film 220 ohm 1/5W J	1	
R144/145	3069392970	Carbon Film 3.9k ohm 1/5W J	2	
R146	3069102970	Carbon Film 1k ohm 1/5W J	1	
R147L/R	3069102970	Carbon Film 1k ohm 1/5W J	2	
R148L/R	3069104970	Carbon Film 100k ohm 1/5W J	2	
R149L/R	3069104970	Carbon Film 100k ohm 1/5W J	2	
R150L/R	3069564970	Carbon Film 560k ohm 1/5W J	2	
R151L/R	3069433970	Carbon Film 43k ohm 1/5W J	2	
R152L/R	3069821970	Carbon Film 820 ohm 1/5W J	2	
R153L/R	3069102970	Carbon Film 1k ohm 1/5W J	2	
R154L/R	3069104970	Carbon Film 100k ohm 1/5W J	2	
R155/156	3069470970	Carbon Film 47 ohm 1/5W J	2	
R157L/R	3069102970	Carbon Film 1k ohm 1/5W J	2	
R158L/R	3069102970	Carbon Film 1k ohm 1/5W J	2	
R159L/R	3069102970	Carbon Film 1k ohm 1/5W J	2	
R160L/R	3069102970	Carbon Film 1k ohm 1/5W J	2	
R161/162	3069470970	Carbon Film 47 ohm 1/5W J	2	
R163	3069104970	Carbon Film 100k ohm 1/5W J	1	
R164L/R	3069473970	Carbon Film 47k ohm 1/5W J	2	
R165/166	3069470970	Carbon Film 47 ohm 1/5W J	2	
VR101	3248020343	20k(B), FM Tuner Level, ADJ.	1	
VR102	3248020243	2k(B), Seperation, ADJ.	1	
VR103	3248020343	20k(B), AM Tuner Level, ADJ.	1	
Q101	2208406103	KTC1923Y(KTC3194), IF Amplifier, Silcon, NPN	1	
Q102	2208606108	KTC2240BL/BKTC3200BL, PLL-Lpf, Silcon, NPN	1	
Q103	2218211100	FET 2SD168D, Low Pass Filter, PLL-LPF, Silcon	1	
Q104/105	2208622105	DTA114Y, Switching	2	
Q106-108	2208622104	DTC114TS, Switching	3	
Q109/110	2208606108	KTC2240BL/BKTC3200BL, PLL-LPF, Silicon NPN	2	
Q111L/R	2208622104	DTC114TS, Switching, Silicon NPN	2	
Q112	2208622105	DTA114Y, Switching, Silicon NPN	1	
XT101	3908101030	7.2MHz	1	

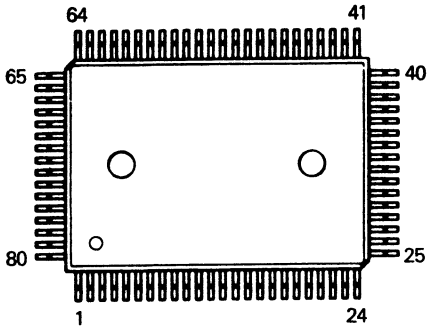
Ref. No.	Parts No.	Description	Q'ty	Version
XT102	3938001009	CSB 456	1	
RESON	3938101880	CSA 4.19CMG	1	
SENSON	2408004004	UC30043Sensor rPM-600CB	1	
P1-1	**054011010004**	**Ass'y P.C.B Volume**		
15	4628058310	Switch Push		
16	3208066410	VR Motor		
C201L/R	3519681935	Ceramic Tubular 680 pF 50V J	2	
C202L/R	3679104120	Mylar 0.1 uF 100V J	2	
C203/204	3479310121	Electric SG 100 uF 10V M	2	
C205	3479347021	Electric SG 47 uF 25V M	1	
IC201	2168007204	TA7291S, Motor Control	1	
R201L/R	3069563970	Capbon Film 56k ohm 1/5W J	2	
R202L/R	3069682970	Capbon Film 6.8k ohm 1/5W J	2	
R203	3069103970	Capbon Film 10k ohm 1/5W J	1	
R204	3069472970	Capbon Film 4.7k ohm 1/5W J	1	
R205	3069470970	Capbon Film 47 ohm 1/5W J	1	
CNT201	436104103331	Lead Ass'y 100mm 4P	1	
P1	**054010110005**	**Ass'y P.C.B Main**		**A**
P1	**054010410006**	**Ass'y P.C.B Main**		**D**
P1	**054010510007**	**Ass'y P.C.B Main**		**E,F,G**
	4255001010	Fuse Clip	6	
21	3208060410	VR Base/Tre	2	
22	3208060410	VR Balance	1	
25	7505206130	Regulator TR Heatsink, AL	1	
26	7503015710	Heatsink Power, AL	1	
33 ⚠	4408105510	Speaker Terminal	1	
34 ⚠	4448103010	Outlet AC, 94V-1	1	A,B
	4448103610	Outlet AC, 94V-1	1	C,D,E,G
35	4438105010	Digilink Jack	1	
C301L/R	3479247971	Electric SA 4.7 uF 50V M	2	
C302L/R	3519101935	Ceramic Tubular 100 pF 50V J	2	
C303L/R	3479210071	Electric SA 10 uF 50V M	2	
C304L/R	3679153120	Mylar 0.015 uF 100V J	2	
C305L/R	3679823120	Mylar 0.082 uF 100V J	2	
C306L/R	3679332120	Mylar 0.0033 uF 100V J	2	
C307L/R	3679183120	Mylar 0.018 uF 100V J	2	
C308L/R	3519471935	Ceramic Tubular 470 pF 50V J	2	
C309/310	3479347041	Electric SG 47 uF 25V M	2	
C311	3479247971	Electric SA 4.7 uF 50V M	1	
IC301	2168206103	KIA75559S(KIA4559P), OP Amplifier	1	
R301L/R	3069104970	Capbon Film 100k ohm 1/5W J	2	
R302L/R	3069105970	Capbon Film 1M ohm 1/5W J	2	
R303L/R	3069104970	Capbon Film 100k ohm 1/5W J	2	
R304L/R	3069102970	Capbon Film 1k ohm 1/5W J	2	
R305L/R	3069223970	Capbon Film 22k ohm 1/5W J	2	
R306L/R	3069392970	Capbon Film 3.9k ohm 1/5W J	2	
R307L/R	3069222970	Capbon Film 2.2k ohm 1/5W J	2	
R308L/R	3069561970	Capbon Film 560 ohm 1/5W J	2	
R309L/R	3069104970	Capbon Film 100k ohm 1/5W J	2	
R310/311	3069470970	Capbon Film 47 ohm 1/5W J	2	
R312	23069102970	Capbon Film 1K ohm 1/5W J	1	
CNT301	436103357131	Lead Ass'y 350mm 3P	1	
C401L/R	3479233971	Electric SA 3.3 uF 50V M	2	
C402L/R	3519471935	Ceramic Tubular 470 pF 50V J	2	
C403L/R	3519471935	Ceramic Tubular 470 pF 50V J	2	
C404L/R	3519150935	Ceramic Tubular 15 pF 50V J	2	
C405L/R	3519033935	Ceramic Tubular 3.3 pF 50V J	2	
C406L/R	3479247971	Electric SA 4.7 uF 50V M	2	
C407L/R	3519050935	Ceramic Tubular 5 pF 50V J	2	
C408L/R	3519200935	Ceramic Tubular 20 pF 50V J	2	
C409L/R	3519102935	Ceramic Tubular 1000 pF 50V J	2	
C410L/R	3519221935	Ceramic Tubular 220 pF 50V J	2	
C411L/R	3519221935	Ceramic Tubular 220 pF 50V J	2	
C412L/R	3679473120	Mylar 0.047 uF 100V J	2	
C413L/R	3479247971	Electric SA 4.7 uF 50V M	2	
C414L/R	3679473120	Mylar 0.047 uF 100V J	2	
C415	3479347121	Electric SG 470 uF 10V M	1	
C416L/R	3519332935	Ceramic Tubular 3300 pF 100V J	2	D
C417L/R	3519472935	Ceramic Tubular 4700 pF 100V J	2	D
C418	3479347041	Electric SG 47 uF 25V M	1	
L401	2648001010	Inductor 0.5uH	1	
D401L/R	2058306101	1N4148, Switching	2	
D402L/R	2058306101	1N4148, Switching	2	
D403L/R	2258599127	Zener, UZ 18.0BSC	2	
D404L/R	2058306101	1N4148, Switching	2	
D405L/R	2058306101	1N4148, Switching	2	
D406	2258599103	Zener, UZ 5.1BSC	1	

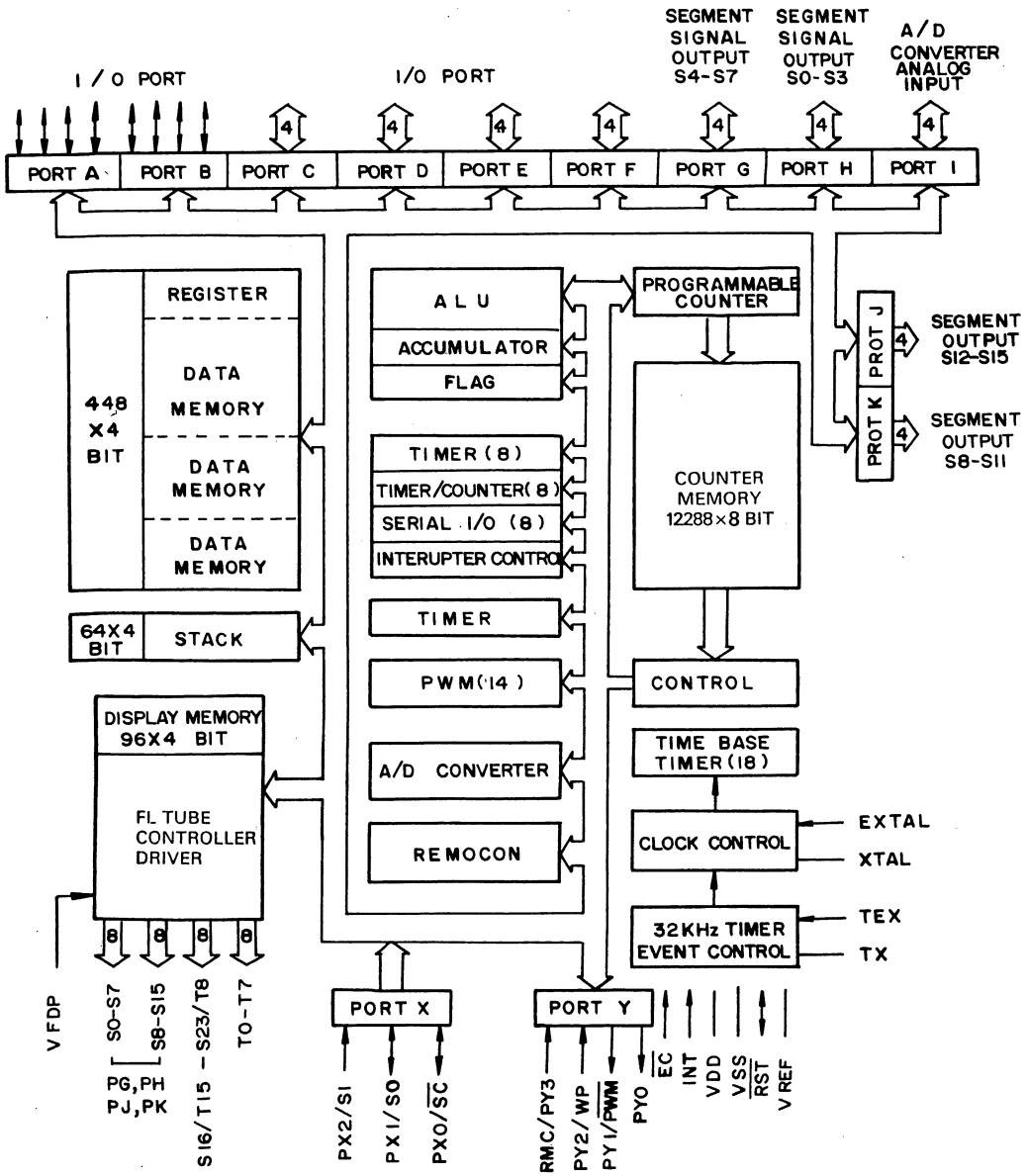
Ref. No.	Parts No.	Description	Q'ty	Version
D407	2258599102	Zener, UZ 4.3BSB	1	
D408L/R	2258599112	Zener, UZ 20.0BSC	2	
D409L/R	2258599127	Zener, UZ 18.0BSC	2	
D410	2058306101	1N4148, Switching	1	
R401L/R	3069332970	Carbon Film 3.3k ohm 1/5W J	2	
R402L/R	3069202970	Carbon Film 2k ohm 1/5W J	2	
R403L/R	3069473970	Carbon Film 47k ohm 1/5W J	2	
R404L/R	3069103970	Carbon Film 10k ohm 1/5W J	2	
R405L/R	3069103970	Carbon Film 10k ohm 1/5W J	2	
R406L/R	3069681970	Carbon Film 680 ohm 1/5W J	2	
R407L/R	3069104970	Carbon Film 100k ohm 1/5W J	2	
R408L/R	3069122970	Carbon Film 1.2k ohm 1/5W J	2	
R409L/R	3069122970	Carbon Film 1.2k ohm 1/5W J	2	
R410L/R	3069123970	Carbon Film 12k ohm 1/5W J	2	
R411L/R	3069202970	Carbon Film 2k ohm 1/5W J	2	
R412L/R	3069393970	Carbon Film 39k ohm 1/5W J	2	
R413L/R	3069151970	Carbon Film 150 ohm 1/5W J	2	
R414L/R	3069242970	Carbon Film 2.4 ohm 1/5W J	2	
R415L/R	3069911970	Carbon Film 910 ohm 1/5W J	2	
R416L/R	3069151970	Carbon Film 150 ohm 1/5W J	2	
R417L/R	3069153970	Carbon Film 15k ohm 1/5W J	2	
R418L/R	3069221970	Carbon Film 220 ohm 1/5W J	2	
R419L/R	3059278682	Cement 0.27 ohm 3W J	2	
R420L/R	3059278682	Cement 0.27 ohm 3W J	2	
R421L/R	3069222970	Carbon Film 2.2k ohm 1/5W J	2	
R422L/R	3069153970	Carbon Film 15k ohm 1/5W J	2	
R423L/R	3069222970	Carbon Film 2.2k ohm 1/5W J	2	
R424L/R	3069100970	Carbon Film 10 ohm 1/5W J	2	
R425L/R	3069100970	Carbon Film 10 ohm 1/5W J	2	
R426L/R	3029100472	Metal Film 10 ohm 1W K	2	
R427L/R	3069123970	Carbon Film 12k ohm 1/5W J	2	
R428	3069152970	Carbon Film 1.5k ohm 1/5W J	1	
R429	3069242970	Carbon Film 2.4K ohm 1/5W J	1	
R430	3069473970	Carbon Film 47k ohm 1/5W J	1	
R431	3069102970	Carbon Film 1k ohm 1/5W J	1	
R432	3069103970	Carbon Film 10k ohm 1/5W J	1	
R433	3069102970	Carbon Film 1k ohm 1/5W J	1	
R434L/R	3029222472	Metal Film 2.2k ohm 1W K	2	
Q401	2208606112	KTD1302S, Mute, Silicon, NPN		
Q402L/R	2208606108	KTC2240BL/BKTC3200BL, Silicon, NPN	2	
Q403L/R	2208606108	KTC2240BL/BKTC3200BL, Silicon, NPN	2	
Q404L/R	2208606104	KTC1815Y(BKTC3198Y), Silicon, NPN	2	
Q405L/R	2208606104	KTC1815Y(BKTC3198Y), Silicon, NPN	2	
Q406L/R	2208206102	2SA949, Current Source, Silicon, PNP	2	
Q407L/R	2208606107	KTC2229, Voltage Driver, Silicon, NPN	2	
Q408L/R	2008622110	C4137, Switching, Silicon, NPN	2	
Q409L/R	2228406120	BKTC2235, Voltage Driver, Silicon, NPN	2	
Q410L/R	2028106107	KTA965, Voltage Driver, Silicon, PNP	2	
Q411L/R	2028407109	2SD718, Power, siLICON, NPN	2	
Q412L/R	2028107106	2SB688, Power, Silicon NPN, Silicon, PNP	2	
Q413L/R	2208606104	KTC1815Y(BKTC3198Y), Switching, Silicon, NPN	2	
Q414/415	2208606114	MPSA06, Switching, Silicon, NPN	2	
Q416/417	2208622105	DTA114Y, Switching, Silicon, PNP	2	
C501/502	3419533222	Electric SG 3300 uF 50V M	2	
C503/504	3679104120	Mylar 0.1 uF 100V J	2	
C505	3479210071	Electric SA 10 uF 50V M	1	
C506	3479210971	Electric SA 1 uF 50V M	1	
C507/508	3479210071	Electric SA 10 uF 50V M	2	
C509	3549472407	Ceramic Disc 0.0047 uF 400V J	1	
C510/511	3679683120	Mylar 0.068 uF 100V J	2	
C512	3479347149	Electric SG 470 uF 25V 1		
C513	3479347041	Electric SG 47 uF 25V M	1	
C514	3479210971	Electric SA 1 uF 50V M	1	
D501-504⚠	2058100136	1N5402, Switching	4	
D505	2258599116	Zener, UZ 12.0BSC	1	
D506	2258522118	Zener, UZ 11.0BSC	1	
D507	2258599103	Zener, UZ 5.1BSB	1	
D508-512⚠	2258100135	1N4002, Rectifier	5	
D513/514	2258599102	Zener, UZ 4.3BSB	2	
IC501⚠	2168601105	GD7815, Regulator	1	
IC502⚠	2168601111	GL7915, Regulator	1	
IC503⚠	2168601110	GD7806, Regulator	1	
R501/502	3029220572	Metal Film 22 ohm 2W K	2	
R503	3029561472	Metal Film 560 ohm 1W K	1	
R504	3029100472	Metal Film 10 ohm 1W K	1	
R505	3069222970	Carbon Film 2.2K ohm 1/5W J	1	
R506	3069682970	Carbon Film 6.8k ohm 1/5W J	1	
R507	3029335370	Metal Film 3.3M ohm 1/2W J	1	
R508	3029560472	Metal Film 56 ohm 1W K	1	
R509	3069332970	Carbon Film 3.3k ohm 1/5W J	1	

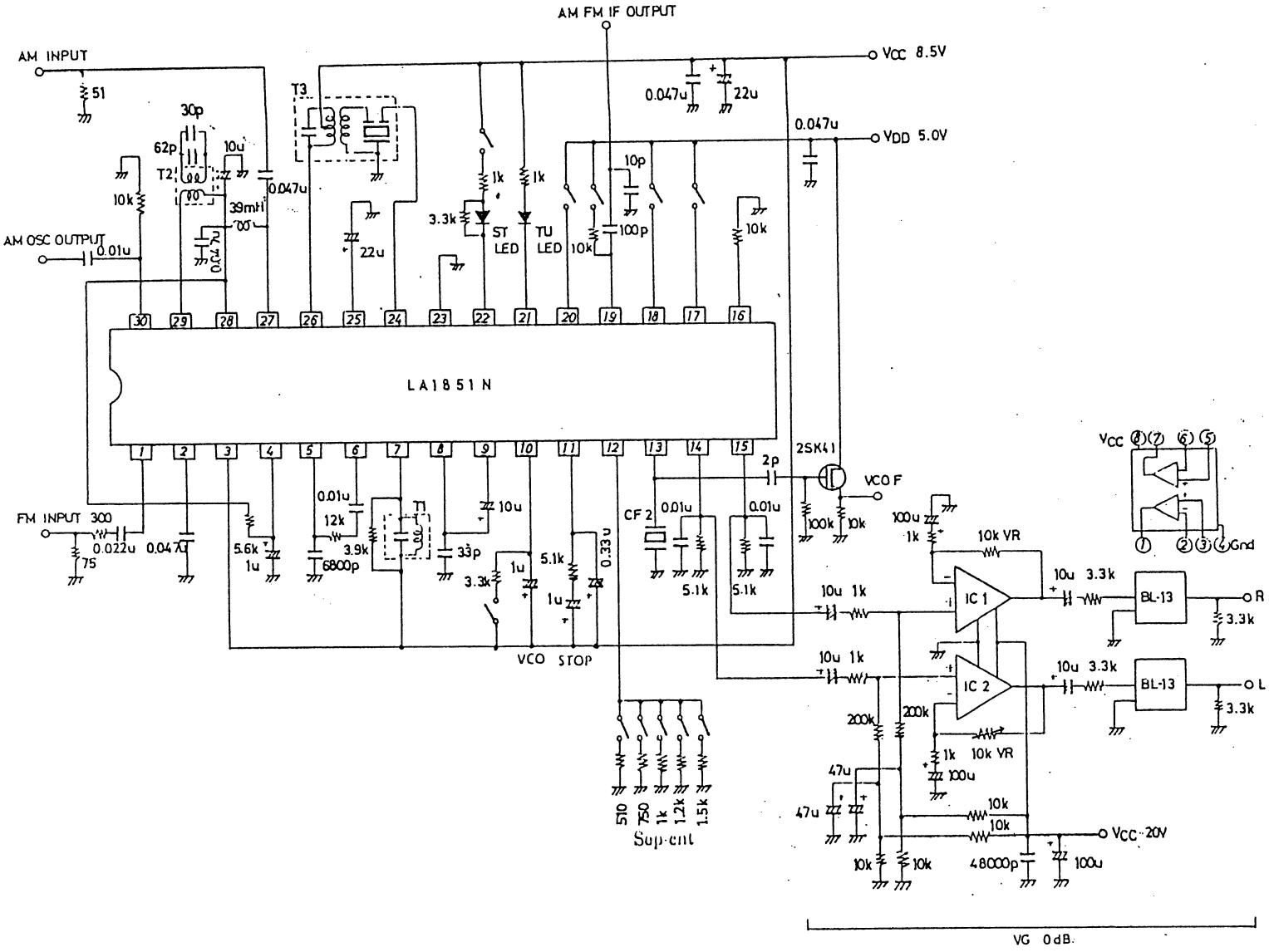
Ref. No.	Parts No.	Description				Q'ty	Version
R507	3029335370	Metal Film	3.3M ohm	1/2W	J	1	
R508	3029560472	Metal Film	56 ohm	1W	K	1	
R509	3069332970	Carbon Film	3.3k ohm	1/5W	J	1	
R510	3069102970	Carbon Film	1k ohm	1/5W	J	1	
R511	3069822970	Carbon Film	8.2k ohm	1/5W	J	1	
R512	3029222572	Metal Film	2.2k ohm	2W	K	1	
R513	3029220572	Metal Film	22 ohm	2W	K	1	
Q501	2208206105	KTA1015Y(BKTA1266Y), Switching, Silicon, PNP				1	
Q502	2208606104	KTC1815Y(BKTC3198Y), Switching, Silicon, NPN				1	
RL501	5528007620	OST-S-112DM, STAND-BY				1	
F501	⚠ 5508202621	NB 3A 125V				1	A
	5508302135	T 1.25A 125V				1	C,D,E,F,G
F502	⚠ 5508302534	T 2.5A 250V				1	D
F503	⚠ 5508200921	NB 150mA 125V				1	A
	5508300734	T 100mA 125V				1	C,D,E,F,G
CNT501	4428525780	Pin Base 2P					
CNT502	4428525790	Pin Base 3P					
CNT503	4428505710	Wafer 3P					
CNT504	436102353331	Lead Ass'y 280mm 2P					
CNT505	52438012201	Ass'y Posistor					
TRANS	⚠ 2828096001	STAND-BY TRANS FORMER, 120V/60Hz A.					
(TRANS)	⚠ 2828090900	STAND-BY TRANS FORMER, 220V/60Hz C,D,E,F,G					
P2	**054010110008**	**Ass'y P.C.B Front**					**A**
	054010410009	**Ass'y P.C.B Front**					**D**
	054010510010	**Ass'y P.C.B Front**					**E,F,G**
10	6045010020	Holder Sensor, ABS, Black				1	
11	4658003710	Switch Tact				23	
C601	3479210071	Electric SA	10 uF	50V	M	1	
C602	3519104935	Ceramic, Tubular	0.1 uF	50V	J	1	
C603	3439147312	AC206G473Z5R5 (0.047F)				1	
C604	3479347041	Electric SG	47 uF	25V	M	1	
C605	3479210971	Electric SA	1 uF	50V	M	1	
C606	3679103120	Mylar	0.01 uF	100V	J	1	
L601	2648610184	Inductor 100uH				1	
CNT601	436210283332	Lead Ass'y 280mm 10P				1	
CNT602	436210203332	Lead Ass'y 200mm 10P				1	
CNT603	436203123332	Lead Ass'y 120mm 3P				1	
CNT604	436203403332	Lead Ass'y 400mm 3P				1	
CNT605	436402283231	Lead Ass'y 280mm 2P				1	
D601-609	2058306101	1N4148, Switching				9	
D610	2371124701	SLR34URC, Red				1	D
D611	2058306101	1N4148, Switching				1	
IC601	2138322154	CXP - 50112, CPU				1	
R601-605	3069103970	Carbon Film	10k ohm	1/5W	J	5	
R612	3069331970	Carbon Film	330 ohm	1/5W	J	1	D
R613	3069103970	Carbon Film	10k ohm	1/5W	J	1	
R614	3069331970	Carbon Film	330 ohm	1/5W	J	1	
R615	3069103970	Carbon Film	10k ohm	1/5W	J	1	
R616-620	3069473970	Carbon Film	47k ohm	1/5W	J	5	
R621	3069103970	Carbon Film	10k ohm	1/5W	J	1	
R622/623	3069472970	Carbon Film	4.7k ohm	1/5W	J	2	
D612	2058306101	1N4148, Switching				1	
R624	3069223970	Carbon Film	22k ohm	1/5W	J	2	
R625	3069224970	Carbon Film	220k ohm	1/5W	J	2	
Q601/602	2208606104	KTC1815Y(BKTC3198Y), Switching, Silicon, NPN				2	
FL601	2328130308	FL, Display FIP8CXM8				1	
P1-2	**054011010011**	**Ass'y P.C.B Speaker Selector**					
9	4438004410	Jack Phone				1	
17	4628043810	Switch, Push				2	
R701L/R	3039391572	Metal Oxide	390 ohm	2W	J	2	
P2-2	**054011010012**	**Ass'y P.C.B Power**					
11	4658003710	Switch Tact				1	
	054011010013	**Ass'y P.C.B Remocon**					
IC001	2138013122	UPD6122G-002				1	
Q1	2008610102	SD1302S				1	
X-TAL	3938101890	Resonator Ceramic, CRA455				1	
D1	2058322101	Diode, 1N4148M				1	
D2	2408001139	Diode, I.R EL-5HIR7				1	
C1	3479247021	Electric SA	47 uF	10V	M	1	
R3-R7	3069224970	Carbon Film	220K ohm	1/5W	J	5	
R1	3069471970	Carbon Film	470 ohm	1/5W	J	1	
R2	3069100970	Carbon Film	10 ohm	1/5W	J	1	

SEMICONDUCTOR LEAD IDENTIFICATION & INTERNAL DIAGRAM

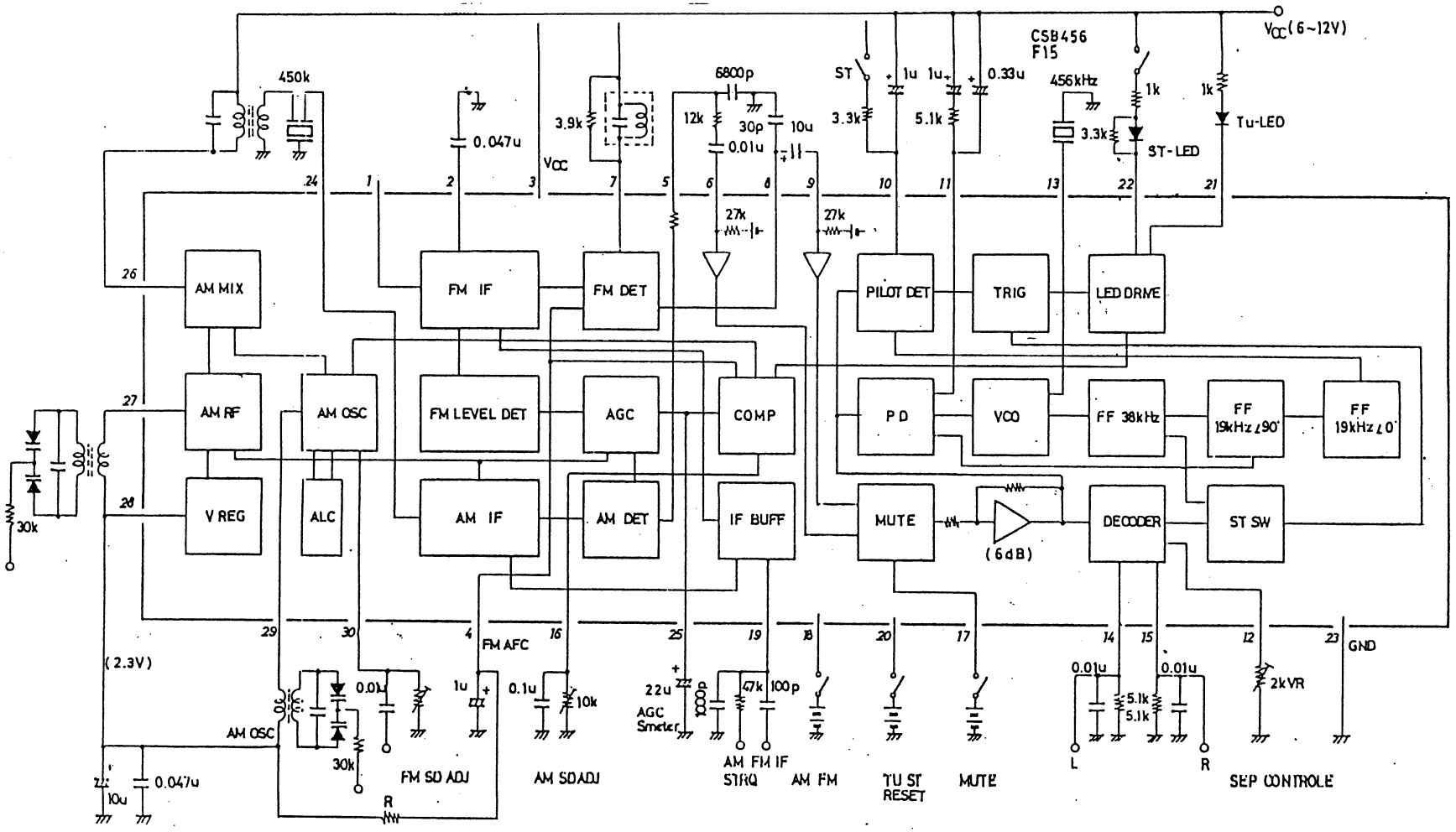
CXP 50112 : IC601



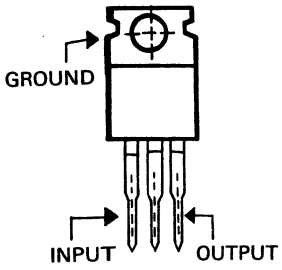


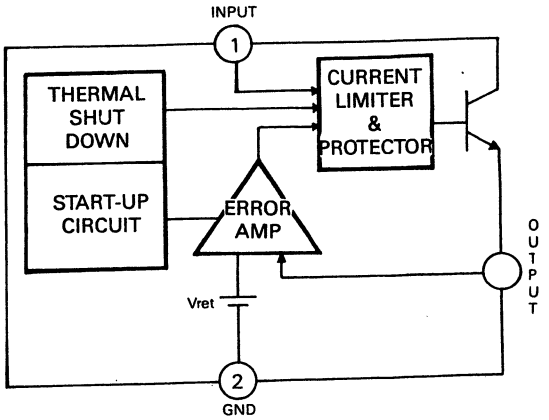

AM FM IF OUTPUT
AM INPUT
51
30p
62p
T2
10u
T3
0.047u
10k
39mH
AM OSC OUTPUT
0.01u
22u
3.3k
1k
1k
ST LED
TU LED
10p
100p
10k
10k
0.047u
Vcc 8.5V
VDD 5.0V
0.047u
22u
LA1851N
30 29 28 27 26 25 24 23 22 21 20 19 18 17 16
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
2p
2SK41
VCO F
FM INPUT 300
0.022u
0.047u
75
5.6k
1u
0.01u
12k
3.9k
6800p
33p
10u
3.3k
1u
1u
5.1k
0.33u
VCO STOP
CF 2
0.01u
5.1k
0.01u
5.1k
100k
10k
100u
1k
10k VR
10u 1k
IC 1
10u 3.3k
BL-13
R
3.3k
10u 1k
IC 2
10u 3.3k
BL-13
L
3.3k
200k
200k
1k
10k VR
100u
47u
47u
10k
10k
Vcc 20V
10k
10k
48000p
100u
510
750
1k
1.2k
1.5k
Sup-cnt
Vcc
Gnd
VG 0dB

INTERNAL DIAGRAM:LA1851N

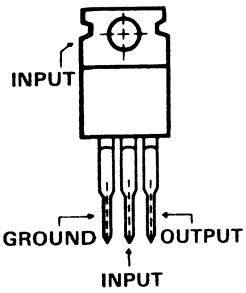


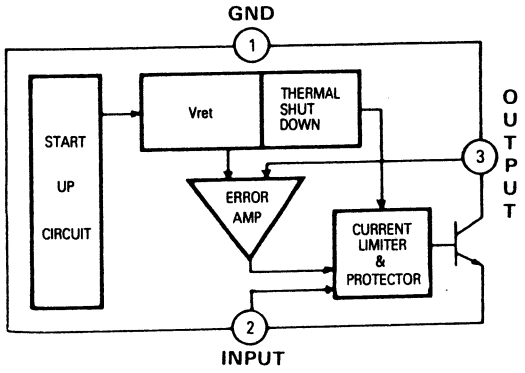
GD7805 : IC503
GD7815 : IC501



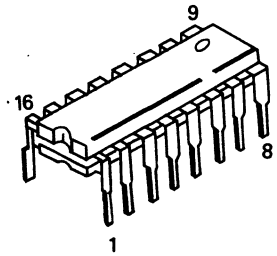


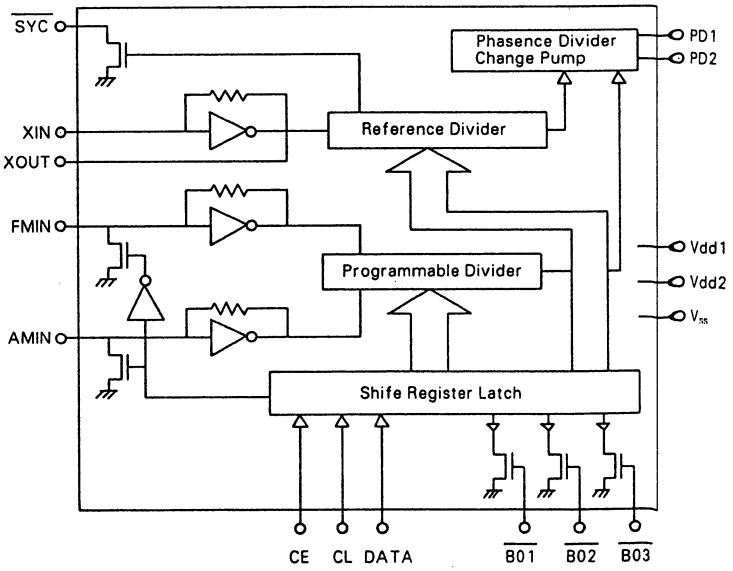
GD7915 : IC502



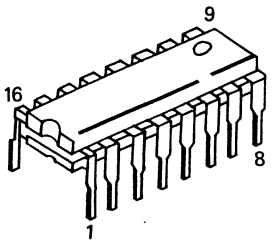


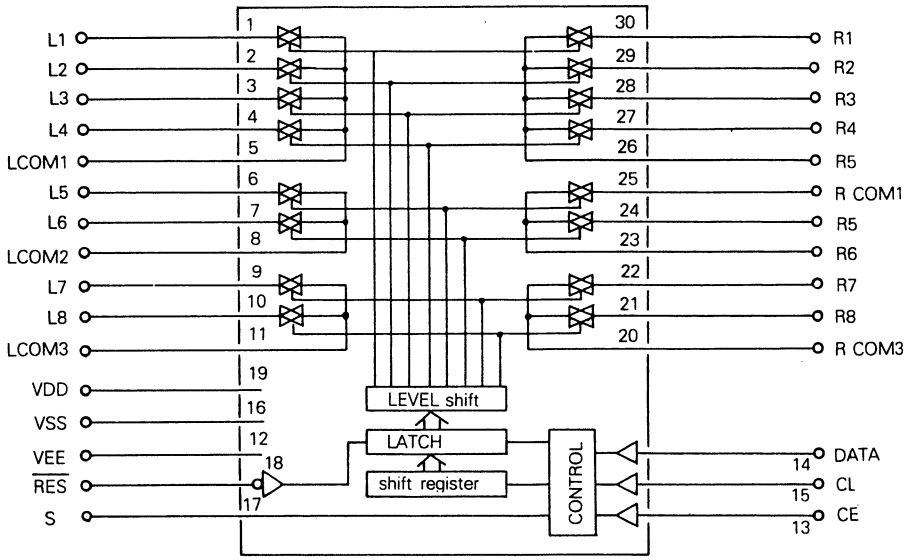
LM7001 : IC101



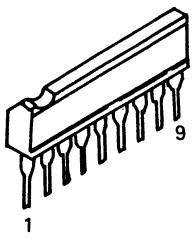


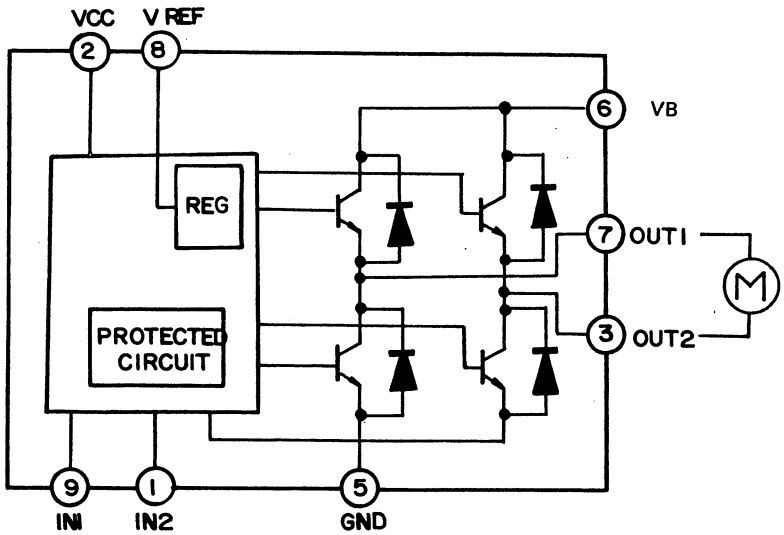
LC7821 : IC104



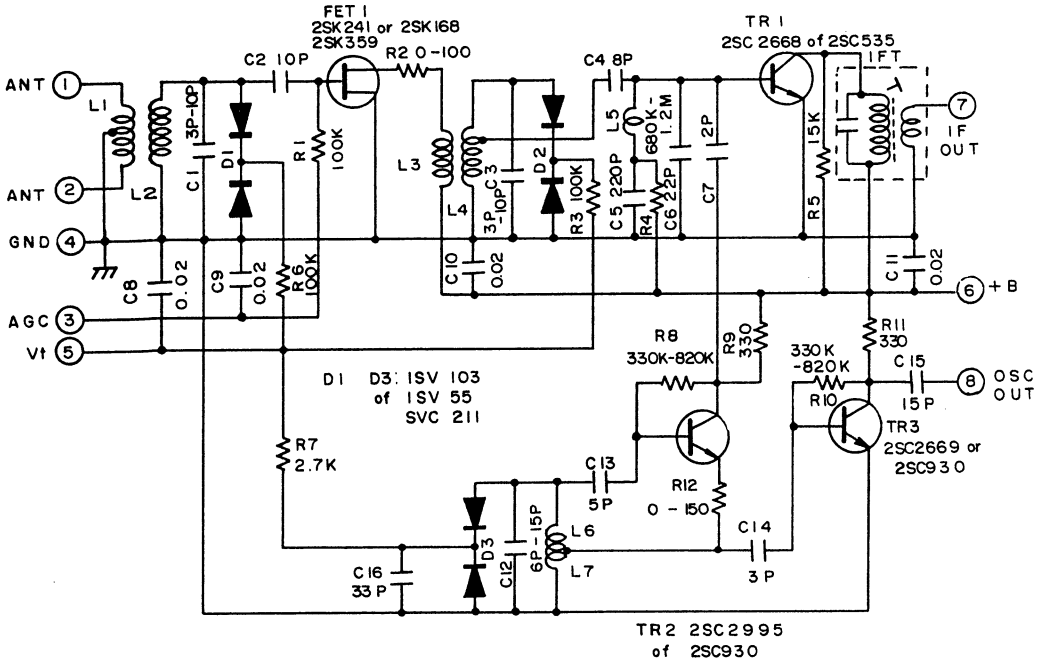


TA7291S : IC201

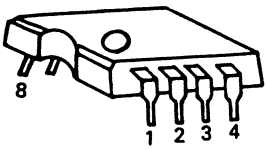


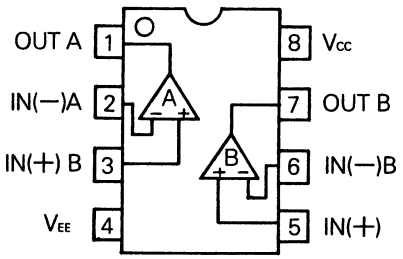


FRONT-END : FE306-A15

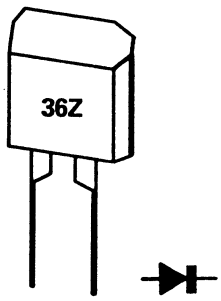


KIA75559P : IC103,IC105,IC301

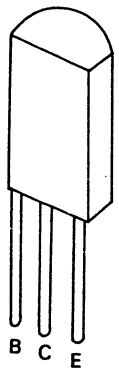




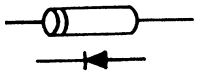
KV1236Z : VD101, VD102



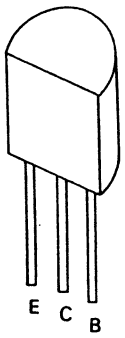
2SK168D : Q103



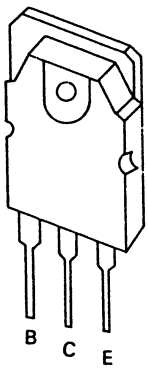
IN4148 : D102,D103,D401,D402,D404,D405,D410
D515,D601~D609,D611,D612
IN4002 : D508~D512
IN5402 : D501~D504



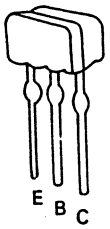
MPSA06 : Q414,Q415



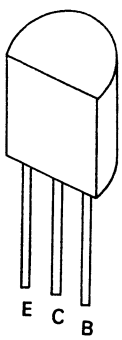
2SD718 : Q411
2SB688 : Q412



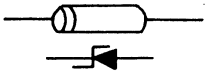
DTA114Y : Q104,Q105,Q112,Q416,Q417
DTC114T : Q106~Q108,Q111



KTA1015Y : Q501
KTC1815Y : Q404,Q405,Q413,Q502
Q601,Q602
2SD1302S : Q401
KTC2240BL : Q102,Q109,Q110,Q402,Q403
KTC2229 : Q407
KTC2235C : Q409
KTA949 : Q406
KTC1923Y : Q101
KTC1437 : Q408
KTA965 : Q410



ZD18BM : D403,D409
ZD12BM : D505
ZD11BM : D506
ZD5.1BS : D101,D406,D507
ZD4.3BS : D407,D513,D514
ZD20 : D408



SEMICONDUCTOR VOLTAGE CHART

Ref. No.		FM	AM
IC101	1	1.3 V	1.3 V
	2	1.8 V	1.7 V
	3	0 V	0 V
	4	5 V	5 V
	5/6	0 V	0 V
	7	1.7 V	0.4 V
	8	1.7 V	0 V
	10	0 V	1.8 V
	11	3 V	0 V
	12	5.1 V	5.1 V
	13	5.1 V	5.1 V
	14	0.5 V	0.5 V
	15	1 V	0.5 V
	16	0 V	0 V
Ref. No.		**FM 98.1 MHz**	**AM 999 kHz**
IC102	1/2	2.2 V	2.4 V
	3	9.7 V	9.5 V
	4	1.8 V	2.3 V
	5	0 V	0.6 V
	6	2.2 V	2.2 V
	7	9.7 V	9.5 V
	8	3.3 V	2.4 V
	9	2.2 V	2.2 V
	10	8.7 V	9.2 V
	11	8.3 V	8.1 V
	12	0.4 V	0.2 V
	13	8.4 V	7.4 V
	14	5 V	4.7 V
	15	5 V	4.8 V
	16	1.6 V	1.5 V
	17	0 V	0 V
	18	4.9 V	0.5 V
	19	0.2 V	0.2 V
	20	0.8 V	0.8 V
	21	4.9 V	5.5 V
	22	4.6 V	5.5 V
	23	0 V	0 V
	24	2.2 V	2.4 V
	25	0.3 V	0.7 V
	26	9.7 V	9.5 V
	27-29	2.4 V	2.3 V
	30	1.0 V	0.8 V
IC103	1-3	0 V	
	4	-13.2 V	
	5-7	0 V	
	8	13.2 V	
Ref. No.		**#70**	**#69**
IC601	USA	5 V	5 V
	EUR	0 V	0 V
	KOR	5 V	0 V
Ref. No.		**No.Load No Signal**	
IC104	1-11	0 V	
	12	-15 V	
	13	0.7 V	
	14/15	0 V	
	16/17	0 V	
	18/19	15 V	
	20-30	0 V	

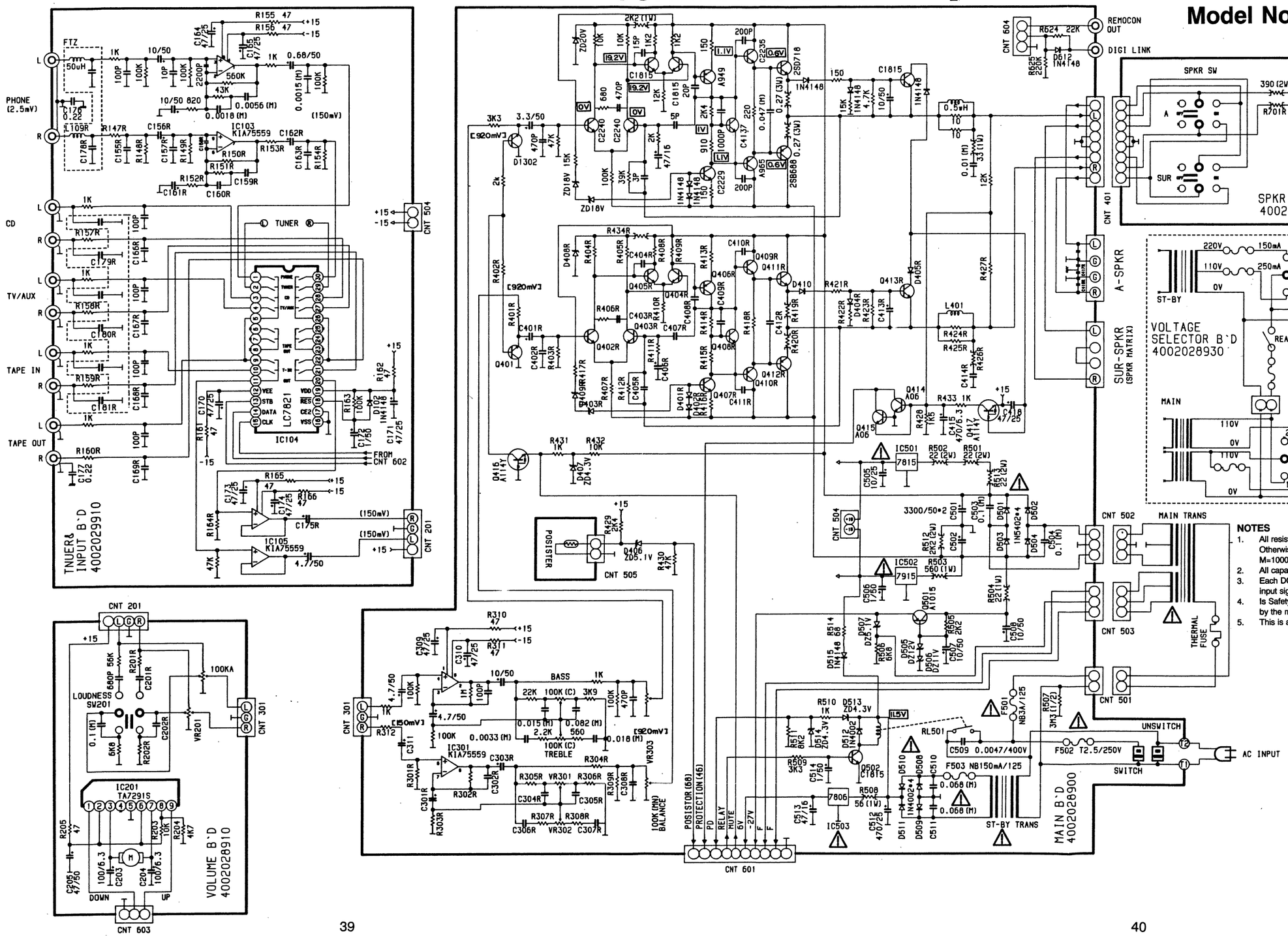
Ref. No.		No.Load No Signal
IC105 IC301	1-3	0 V
	4	-15.1 V
	5-7	0 V
	8	15.1 V
IC201	1	5 V
	2	15 V
	3-5	0 V
	6	15 V
	7	0 V
	8-9	5 V
Ref. No.		**FM**
IC601	1	-5 V
	2	-14.5 V
	3	-12.8 V
	4	-13 V
	5	-14.7 V
	6	-3.4 V
	7	-13.4 V
	8	-12.7 V
	9	-12.7 V
	10	-7.8 V
	11	-2.5 V
	12	-8 V
	13	-5 V
	14	-1.5 V
	15	-1.5 V
	16	-5 V
	17/20	-22 V
	21/28	-18 V
	29	5 V
	30	0 V
	31	5 V
	32	5 V
	33	3 V
	34	5 V
	35-38	0 V
	39	5 V
	40-43	0 V
	44-46	5 V
	47/48	0 V
	49-54	5 V
	55-60	0 V
	61/62	5 V
	63-65	0 V
	66	5 V
	67/68	0 V
	69/70	5 V
	71	0 V
	72	2.5 V
	73	5 V
	74	2.5 V
	75	5 V
	76	-23 V
	77/80	0 V

Ref. No.		FM 98.1 MHz	AM 999 kHz
Q101	E	1.4 V	0 V
	B	2 V	0 V
	C	13 V	0 V
Q102	E	0 V	0 V
	B	4 V	5 V
	C	0.5 V	0.6 V
Q103	D	13.7 V	13.7 V
	B	0.5 V	0.6 V
	G	0.5 V	0.5 V
Ref. No.		**FM**	**AM**
Q104	E	15 V	15 V
	B	15 V	0 V
	C	0.4 V	15 V
Ref. No.		**MONO**	**STEREO**
Q105	E	10 V	9.8 V
	B	10.0 V	8.6 V
	C	0 V	10 V
Q106	E	0 V	0 V
	B	0 V	10 V
	C	5.1 V	0 V
Ref. No.		**FM**	**AM**
Q107	E	0 V	0 V
	C	0 V	8.4 V
	B	15 V	0 V
Q108	E	0 V	0 V
	C	0.3 V	0 V
	B	0 V	8.5 V
Q109	E	4.3 V	4.3 V
	C	8.5 V	8.5 V
Q110	B	4.8 V	4.8 V
Ref. No.		**No Load No Signal**	
Q401L/R	E	0 V	
	C	0 V	
	B	0 V	
Q402L/R	E	-0.6 V	
	C	19.2 V	
	B	0 V	
Q403L/R	E	-0.6 V	
	C	19.2 V	
	B	0 V	
Q404L/R	E	18.7 V	
	C	36.2 V	
	B	19.2 V	
Q405L/R	E	18.7 V	
	C	36 V	
	B	19.2 V	
Q406L/R	E	36.2 V	
	C	1.1 V	
	B	35.6 V	
Q407L/R	E	-36.5 V	
	C	-1.1 V	
	B	-35.8 V	
Q408L/R	E	-1.1 V	
	C	1.1 V	
	B	-0.5 V	

Ref. No.		No Load No Signal	
Q409L/R	E	0.6 V	
	C	36.8 V	
	B	1.1 V	
Q410L/R	E	-0.6 V	
	C	-37 V	
	B	-1.1 V	
Q411L/R	E	0 V	
	C	36.8 V	
	B	0.6 V	
Q412L/R	E	0 V	
	C	-37 V	
	B	-0.6 V	
Q413L/R	E	0 V	
	C	15 V	
	B	0 V	
Q414L/R	E	0 V	
	C	5.6 V	
	B	0 V	
Q4151L/R	E	0 V	
	C	5.6 V	
	B	0 V	
Ref. No.		**MUTE ON**	**MUTE OFF**
Q416	E	5 V	0 V
	C	5 V	0 V
	B	0 V	0 V
Q417	E	15.2 V	0 V
	C	0 V	12.8 V
	B	15.2 V	0 V

SCHEMATIC DIAGRAM I

Model No. : RX-2030R

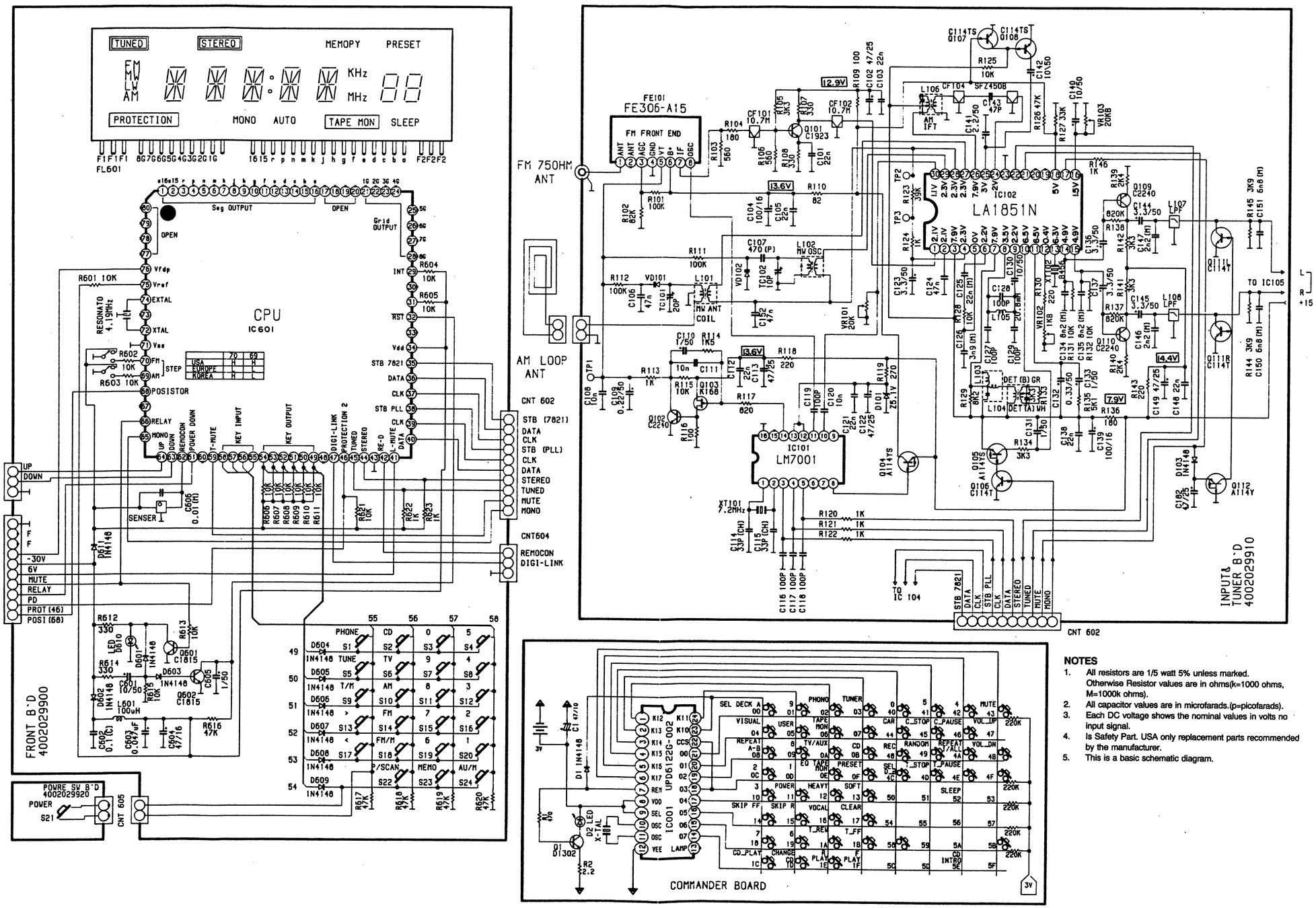


NOTES

1. All resistors are 1/5 watt 5% unless marked. Otherwise Resistor values are in ohms(k=1000 ohms, M=1000k ohms).
2. All capacitor values are in micrcarads.(p=picofarads).
3. Each DC voltage shows the nominal values in volts no input signal.
4. Is Safety Part. USA only replacement parts recommended by the manufacturer.
5. This is a basic schematic diagram.

SCHEMATIC DIAGRAM Ⅱ

Model No. : RX-2030R



NOTES

1. All resistors are 1/5 watt 5% unless marked. Otherwise Resistor values are in ohms(k=1000 ohms, M=1000k ohms).
2. All capacitor values are in microfarads.(p=picofarads).
3. Each DC voltage shows the nominal values in volts no input signal.
4. Is Safety Part. USA only replacement parts recommended by the manufacturer.
5. This is a basic schematic diagram.

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